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Observations ON SOME POINTS IN CONNEXION WITH DETACHMENT OF THE RETINA.*

BY

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THE short time at my disposal I propose to devote to the important subject of the selection of those cases of so-called simple detachment of retina which are suitable for treatment, and to try to indicate which cases of this desperate condition give some reasonable chance of success.

I suppose we shall all agree that when both eyes are affected, or when the only seeing eye has developed a detachment, we may be driven to treatment which we know has little reasonable chance of success. We do this partly on the bare chance that our past experience may be upset, and partly to mark time so that our patient may have the satisfaction of feeling that something is being tried, instead of suffering the double depression caused by the loss of sight and by a policy of hopeless inactivity.

But it is the question of treatment of a case of detachment of one eye only that I wish to discuss, for it is here that our colleagues appear to hold such divergent views. In spite of the articles which appear in the general press from time to time of the successful treatment which has been devised in this or that country, or even in the medical papers, which publish reports of 100 per cent. of successes obtained in a modest series of a few units, we are all painfully aware that our chance of restoring sight with our present knowledge is very slight. When we consider the mental strain which our methods entail, together with the considerable expense incurred in nursing home and professional fees, only those cases where a reasonable chance of success exists should be subjected to treatment. Unsuccessful treatment is regrettable both from the disappointment and loss of money involved, and also from the discredit to the acumen of the profession as a whole, as well as to the individual member who has advised it.

Some say the condition is hopeless whatever the cause, and advise no treatment; some never advise anything beyond rest, and the rest advised may be lying down for twenty minutes twice a day (as I know was advised in a well known German clinic), or it may be complete rest in bed with the head never raised from the pillow. Such treatment may be combined with constitutional measures and counter-irritation but no operation. Others, again, advise operative intervention at once. The majority, I imagine, advise rest, constitutional treatment, and counter-irritation first, and if this be unsuccessful resort to operation.

I have reason to think that quite a large number of cases of detachment are treated on a purely routine plan, without sufficient endeavour being made to find the cause; it is against such a course I chiefly wish to direct my remarks.

Though, in many cases, we know little or nothing of the actual mechanism of the detachment, in others we understand or can make a reasonable guess at it. Now it is surely on the particular mechanism of the detachment in any individual case that the reasonableness of our intervention mainly depends. I think it is correct to state that the retina is either "pushed in" from without or "dragged in" from within or "floated in" when there is a hole.

When the retina is dragged in by cicatricial bands in the retina itself, as in retinitis striata, it seems to me that treatment can be of no avail, and it should not be advised.

When the retina is being dragged in by visible bands in the vitreous we must distinguish two sets of cases: (1) those in which traction is being exerted by one or more definite bands; (2) those in which the whole vitreous is diffusely fibrous, and by its shrinkage is dragging the retina in. In the former group successful results have been obtained by the division of the band, and such a procedure is certainly well worth trying. In the latter group it would seem that no treatment ever could be successful or should be attempted.

When the retina is floated in by fluid vitreous passing through a hole in the retina to the inter-retinal space, there is considerable variation in professional views as to the treatment to be adopted.

Holes in the retina are, of course, often seen, but they can be found much more frequently than many believe who are not in the habit of searching for them, and they probably occur a good deal more often than they are found even by those who do look for them. That they are present in every case of detachment, as some assert, is a view which I think is untenable on many grounds, but chiefly on the study of the variation in the nature of the fluid or semi-solid exudate in the inter-retinal space.

There are many varieties of holes, and they may be caused in several different ways. The macular holes due to trauma or degenerative changes are seldom associated with detachment, or, if this does occur, it is slight and as a rule non-progressive. The peripheral holes—large rents or horseshoe-shaped slits—are generally associated with extensive detachment, either globular, billowy, or shelving. Holes in the retina are of considerable importance in their bearing both on diagnosis and also on treatment. As regards diagnosis, it may be parenthetically noted that the presence of a hole excludes, I believe, the presence of a growth, for, so far as I have been able to learn or observe, a growth and a hole never have been found to exist together.

As regards treatment, the committee appointed by the Ophthalmological Society of the United Kingdom to report on the results of treatment of detachment of the retina during the war recorded no case of cure by surgical treatment of detachment associated with a hole, and only very rare instances by rest. Such results are borne out by my own experience and that of my colleagues, so far as I have been able to learn.

It would seem, then, that treatment such as is at present devised, in cases of detachment with holes is practically valueless, and should not be urged except in only eyes as a last clutch at a straw of hope. If this view be correct it emphasizes the importance of a careful search for holes in every case of simple detachment, so that our patient may not be subjected to a useless form of treatment.

Next we come to the exudative cases where the retina is pushed in by albuminous fluid poured out into the inter-retinal space. It is in this group, where the detachment is associated with retinitis and choroiditis, that the greatest hope of success lies. Here, by treatment, we may hope to allay any inflammatory process which is taking place, to help in the absorption of exudate, or by operative measures drain the inter-retinal space.

In theory, with these clearly cut groups our course would appear fairly simple, but in practice, alas! the majority of cases cannot be thus pigeon-holed; we are unable to state definitely whether the retina is pushed in, pulled in, or floated in; we find no definite signs of cyclitis; we discover no vitreous bands or retinitis striata; we see no sign of inflammation either of the retina or choroid; after careful searching we detect no retinal rent. We may thus have no clue as to the mechanism which has produced the detachment. This group includes the bulk of the traumatic and myopic cases. What are we to do with them? It seems only rational, till our knowledge improves, to give these cases the benefit of the doubt and to treat them.

In whatever group the case falls, should we decide to give treatment, let me urge the advisability of treating as thoroughly as is possible once and for all. If our patient is to give his time, and incur the tedium and expense of a course of this trying treatment, let everything known to be useful be tried fully in the six or eight weeks which he is going to devote to the course, both to give him the satisfaction of knowing that every effort is being made and, what is just as important, to protect him from the poisoned darts of some who, at a later date, because some one measure—such as inunction of mercury or sub-conjunctival injection—has not been tried, may suggest that valuable time has been wasted, and that the treatment was valueless.

[3493]

*A paper read in the Section of Ophthalmology at the Annual Meeting of the British Medical Association in Edinburgh, 1927.

Personally I am in favour of attacking the condition from every possible point of view. Absolute rest in bed, constitutional treatment to combat any general condition, absorptive treatment, and counter-irritation to endeavour to remove the exudate in the inter-retinal space—for example, hot-air baths, mercury inunctions, potassium iodide, blisters to the temple, and subconjunctival injections. If after a fortnight there is no improvement it is advisable to proceed to scleral punctures to drain the inter-retinal space, with or without making an adhesive spot to which the retina may become glued.

For purposes of discussion, I would summarize my remarks.

In retinitis striata and diffuse fibrous degeneration of the vitreous all treatment is useless.

In detachment associated with a hole treatment offers little chance of success.

Definite fibrous bands in the vitreous may be divided.

Detachment associated with retinitis or choroiditis should be actively treated.

Simple detachment in which the mechanism of the detachment is not determinable should be given the benefit of the doubt and treated.

Lastly, treatment, if attempted at all, should be thorough.

The plea of this short communication is for greater thoroughness in our examination of cases of detachment, which should include the careful exploration of the vitreous with the slit-lamp by an expert. By such an examination we may hope to gain new information (1) by which to group our cases more rationally, and (2) by which future treatment may be more successful than that of the past.

By these means the more hopeful cases will have the best chance of restoration of sight, and the hopeless cases may be protected from a course of mental strain and expense the disappointing results of which were a foregone conclusion.

DISCUSSION.

Dr. W. CLARK SOUTER (Aberdeen) gave short notes of six cases of spontaneous reattachment of detached retina—two traumatic, two idiopathic, one myopic, and one pregnancy—recently seen, in which a gross detachment of retina had apparently disappeared, leaving choroido-retinal atrophy-like changes in three, retinitis striata in two cases, and an apparently normal fundus in one case. He discussed the pathological findings in published cases where reattached retinae had come to the microscope, special mention being made of the cases of Rönne and Klainguti. In one of his retinitis striata cases, an idiopathic one, watched over seventeen years, the long white band at the edge of the reattached area was crossed by vessels which were obviously not retinal, and not likely to be choroidal, but rather like new vessels, making a strong resemblance to, and in the author's opinion a possible explanation of, those cases described by Sir William Lister in the *Ophthalmic Review* for 1903, under the heading "Angioid streaks of the retina."

Mr. INGLIS POLLOCK (Glasgow) said he had operated on two patients with detached retina, both of whom recovered. In the first case a relapse occurred and, although the patient had to wait six months for readmission to the infirmary, a second operation was successful in restoring the retina to its normal situation. This was seven years ago, since when there had been no recurrence. In the second case one operation sufficed, and the patient had had no recurrence since the operation, six months ago. Both cases showed that there was no improvement until the inter-retinal fluid was withdrawn; in fact, both patients became worse while they lay up at home with both eyes bandaged. The first showed that success might follow operation in spite of the recurrence of the detachment. Mr. Pollock further said that he had seen a small detachment cured by operation, followed by recurrence of the detachment, and subsequent complete loss of sight in the eye by the extension of the detachment all over the fundus.

Mr. J. W. TUDOR THOMAS (Cardiff) described a case of double detachment of the retina in which reattachment of the retina followed in one eye, leaving pigmentary changes resembling slightly the pigmentation of retinitis pigmentosa. A detachment developed first in the left eye, which became blind, and the lens gradually grew opaque. A large fluid detachment of the retina developed in the right eye about six months after the left eye commenced to fail. Posterior sclerotomy was performed, using the electric cautery. Some opacity developed about the posterior pole of the lens, but ten months later no detachment of the retina could be found, and the retina showed numerous spots of pigmentation. The opacity at the posterior pole had not advanced further up to the time of the last examination. During the last year or so he had observed three cases of detachment of the retina in pregnancy. These cases had several points in common. They were all double detachments, and all three patients had albuminuric retinitis of pregnancy. The detachments all cleared up, and useful vision was restored in each. The vision in one case became 6/12 for each eye; slight macular changes were present.

Dr. J. ROWAN (Glasgow) mentioned several cases of retinal detachment, in one of which the condition was obviously due to a tumour; the patient was myopic in the eye affected. Later the myopia was gradually reduced till the patient became hypermetropic. Both conditions were confirmed by retinoscopy. Enucleation was refused till the eye became glaucomatous; it was then removed and the diagnosis was confirmed. He instanced another case where, with rest in bed and subconjunctival injections, there was a complete cure. The late Mr. Edward Nettleship had agreed that the detachment was completely back in its place; this lasted for a few months, but after going a short railway journey the condition returned. In spite of different methods of treatment the outlook in these cases was very black.

Dr. KERRY (Montreal) gave details of a case of traumatic detachment of two weeks' duration which recovered after a course of iodine injections; in this case there was also almost complete recovery of the lost field. He advocated these iodine injections to promote absorption, and cited another case in which recovery had followed their use. Dr. Kerry thought that the subject of retinal detachment would be much better understood when more was known of the cellular function of absorption.

THE VALUE OF ANTISEPTICS IN MODERN OPHTHALMIC SURGERY.*

BY

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I HAVE been tempted to bring this subject of antiseptics in ophthalmic surgery before the meeting because it seems to me that there is still a considerable amount of difference of opinion on what is or should be a simple matter in these enlightened days.

Some time ago I read in one of our chief ophthalmic journals a long account of an operation for the extraction of cataract, the description of the operation being preceded by meticulous details of preliminary douchings and treatment applied to the eye in order to obtain an aseptic condition, which would eliminate risks of operative and post-operative sepsis.

Similarly, a very recent article in the *Acta Ophthalmologica* (vol. iv, fasc. i) dealing with the same subject of disinfection of the conjunctival sac, starts thus: "It has hitherto proved impossible to make the conjunctiva reliably sterile. It is therefore always with a certain feeling of insecurity that the ophthalmic surgeon proceeds to his operations."

Many surgeons, in fact, seem still to be of opinion that the field of intra-ocular operations requires a somewhat similar course of preparation as is essential when a skin surface is involved. They are impressed with the possibility

* A paper read before the Section of Ophthalmology at the Annual Meeting of the British Medical Association at Edinburgh, 1927.

of disaster in the way of sepsis if such preparations are not carefully observed.

I propose to consider the question of treating the ophthalmic operation field, antiseptically or aseptically, from four points of view: (1) contamination from the conjunctiva; (2) contamination from instruments and dressings; (3) contamination from the fingers of surgeons and assistants; and (4) contamination from the lash area.

There are, of course, other minor sources of contamination, but the ones just mentioned are the most important, and I will confine my remarks to them.

The Conjunctival Sac.

Many years ago I published the report of an exhaustive inquiry into the bacteriology of the normal conjunctival sac. The results of this investigation, which, so far as I am aware, have never been contradicted, and which have certainly guided me safely through many years of operative work, may be summarized as follows. The *normal* sac is in itself antiseptic and requires no treatment prior to operation. So far as its lower section is concerned it is never sterile; it always contains many organisms, but these are either in themselves perfectly harmless, or, if not so harmless, their virulence is speedily destroyed by some inherent antiseptic power of the conjunctiva, which in this respect resembles the peritoneum. This can be easily proved by growing cultures from the lower sac and injecting a solution into the conjunctival sac of animals or even subconjunctivally. In neither case does anything happen. The normal conjunctival sac can never be sterilized for even twenty-four hours by any known means, and all attempts to effect this by antiseptic lotions of sufficient strength to act as effective germicides are futile, simply tending to defeat their object by setting up a reactionary irritation.

Long before antiseptic or the later aseptic surgery was introduced intra-ocular operations were performed with comparative safety, as compared with operations on the body. Indeed, long after the principles of aseptic surgery were generally accepted, ophthalmic surgeons as a class took no very special precautions. I was the first surgeon at Moorfields Hospital to adopt an overall, and my election was in 1900; my revered teacher, Sir John Tweedy, up to the time of his retirement in that year, always used his index finger to effect counter-pressure, and to prevent the eye rotating inwards when making his cataract section, instead of employing fixation forceps. The results obtained then will bear quite a favourable comparison with those seen nowadays with masks, caps, overalls, and all the other appurtenances, which are quite rightly held to be *de rigueur*. I do not advocate a neglect of precautionary measures before operation; the point I wish to make is that the routine use of antiseptic measures arises from a wrong appreciation of facts. What we have to ensure is not that the conjunctiva is sterile, for that is unnecessary and impossible, but that it is healthy, and we can do that by the simplest means. The one great factor in determining this point is the presence of discharge, which can be definitely proved by tying up the eye for a few hours with an aseptic pad. If any discharge appears on the pad on removal or is found clinging to the lashes or canthi, then the conjunctiva is unhealthy, and means must be taken to free the sac from the cause of the discharge before operation is undertaken. Taking smears from the conjunctiva, and acting on the report of the presence of organisms found by this method of examination, is only of value if discharge is present; in its absence the organisms found may be held to be avirulent and harmless. As a matter of fact it is generally possible to tell by mere inspection whether the conjunctiva is healthy or not, but I always adopt this well known and simple expedient of determining it.

If the conjunctiva at the time of operation is healthy it may safely be assumed that it will remain healthy during post-operative treatment under bandage and pad, and such is indeed the case.

Contamination by Instruments and Dressings.

This may be dismissed in a cursory manner, for it is a first principle of all surgery that instruments and dressings must be sterile. I would simply just mention the point that the instruments should not only be sterile but dry.

Contamination from Surgeons' and Assistants' Fingers.

The surgeon's fingers as a source of contamination may obviously be a fruitful cause of disaster. Some surgeons avoid trouble by wearing rubber or other forms of gloves, but, personally speaking, I found the disadvantages of gloves in destroying, as they do, the fine sense of touch which is so important in many ophthalmic operations, to outweigh entirely their manifold advantages in maintaining asepticity, and I entirely gave up their use many years ago in intra-ocular and strabismus operations. But if no gloves are used the surgeon must be meticulously careful that no part of any instrument other than the shaft or handle is ever touched by his fingers. It has to be remembered that washing and scrubbing the hands before operation in no sense renders the fingers sterile. It has been shown that rubbings taken from fingers freshly washed and scrubbed in warm water produce luxuriant growths of organisms, and that while removing surface contamination to some extent, the hands still remain a means of readily infecting the wound. Personally, I endeavour to counter the point to some extent by well soaking my hands in spirit after scrubbing, and by having a bowl of spirit at hand during operation in which I can rinse my hands at any moment if I think it desirable. I do not think this simple fact is nearly so much appreciated as it ought to be, otherwise one would not observe, as I have often done, great indifference on the part of surgeons in the handling of instruments when gloves are not worn. I have often seen surgeons, when operating for strabismus, pick up needles with their fingers and put the needles in the needle-holder, instead of using serrated forceps for the purpose, with the consequence that the sutures are apt speedily to become more or less septic. Then, again, sutures are themselves a ready means of contamination, even after careful sterilization. The satisfactory manipulation of sutures presents real difficulties and requires meticulous care. It is presumed that in cases where sutures are going to be employed the skin of the face as a matter of course will be shut off by a gauze mask excluding all except the operation field, while the scalp is guarded by a folded sterile cloth. The sutures must be kept free from the surgeon's fingers, and this can only be effected by the greatest attention to detail. If, as is commonly the case, the needles and threads are rolled each one on a piece of folded gauze or lint, the needle should be disengaged from the roll with serrated forceps, as just mentioned, and the suture, as it is unrolled, should be held by the assistant in a pair of serrated forceps, and kept free from all contact with his or the surgeon's hands until the suture has been properly adjusted; and when it is being tied the surgeon must be extremely careful that his fingers never approach that part of the suture which is applied to the wound area. It is all perfectly simple, but often, I think, there is lacking that delicacy of attention to detail which is required.

It must be admitted that, even with the greatest attention to detail, sutures will sometimes touch something that they should not, and in this respect an efficient antiseptic, which can without any irritation whatever be applied to the wound area, is most helpful, and gives the surgeon a great feeling of security.

There is nothing, I think, so good for this purpose as flavine. A solution of 1 in 1,000 of this drug can be freely applied to the eye at the time of applying the sutures, and thereafter it can safely be dropped into the eye twice daily in a strength of 1 in 4,000 without causing the slightest disturbance or without producing the smallest delay in the healing process. The charge has been made against flavine that it delays healing, but I can assure all who have not tried it that this accusation, when flavine is used of the strength just mentioned (1 in 4,000), is entirely baseless, healing pursuing its natural course by first intention. I can say that since using this drug regularly, as I have done now for ten years, I have not had a single case of septic sutures after strabismus operations.

Contamination from the Lash Area.

The last point I wish to mention is contamination from the lash area, which is the neighbourhood most difficult to preserve clean when an eye has to be kept bandaged for any length of time. It is not, I am thankful to say, the most important, because there is not the same risk of infection of the operation field from the ciliary border as there is from the other sources of contamination—the conjunctiva, the instruments and accessories, and the surgeon's fingers. On the other hand, I think it is quite impossible, unless special means are taken, to keep the lash area from becoming dirty, and often very quickly so when the eye is kept tied up. In other words, it is quite impossible to sterilize the ciliary borders satisfactorily on account of the organisms which lie beneath the surface round and about the lash follicles. The testing pad worn before operation may be entirely free from all discharge, and the lashes themselves be apparently perfectly clean, but soon after operation, even if they have been cut short, as they should have been, the stumps are apt to get sticky and dirty, and the discharge will then tend to get more and more objectionable, unless the source of trouble can be checked.

It is, therefore, in this regard, as well as in the dealing with sutures, that a non-irritating, efficient antiseptic becomes of extreme value, and once more I urge the use of flavine, which will generally do its work admirably.

After every operation I cover the affected eye with a gamgee pad well sprinkled with a 1 in 4,000 solution of flavine. It makes a delightfully comfortable dressing, which I change twice daily; if this procedure is followed the lash area will rarely cause any trouble whatever. If trouble does occur it will be of a mild character and easily controlled. Something must then be used in addition to, or as a substitute for, flavine, and I know of nothing better than a 2 per cent. solution of protargol employed twice daily as drops. Used at this strength protargol never irritates the wound, and it acts very efficaciously in arresting the discharge.

To sum up, then, the gist of these few remarks is to urge that the maintenance of a healthy operation field with quick normal healing can be obtained by the simplest methods before, during, and after operation. Antiseptics of any kind are only needed as *extra* measures, especially with regard to needles, sutures, and the lash area. If to these simple measures is added meticulous attention to detail, suppuration in the operation field can be eliminated with absolute certainty.

One exception must, however, be made to this assertion, and that arises when force of circumstances prevents the taking of routine precautions. It is occasionally necessary to operate on an acute glaucoma when there is intense congestion and obvious sepsis. In such an exceptional case I think the best antiseptic to use is hydrogen peroxide, with which the eye is flooded immediately before the knife section is made. It is much better than flavine, because the latter is strictly an antiseptic in the true sense of the word, and is not of much value when sepsis is already present.

Finally it is, perhaps, legitimate to quote personal experience in these matters, and I can claim that, in my private practice, I have never experienced the tragedy of intra-ocular suppuration after operation. In hospital practice I must, I think, have occasionally experienced this misfortune, though I cannot recall any instances, and certainly I have no single case impressed on my mind. In hospital work, however, it is not nearly so easy, for many reasons, to impress attention on certain details or to see that such details are carried through, and consequently accidents are more likely to occur there than in private work, where one assumes sole and entire responsibility.

PATHOLOGY OF THE TUBERCULOSIS OF CHILDHOOD AND ITS BEARING ON CLINICAL WORK.*

BY

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RECOGNITION of the widespread occurrence of tuberculous infection acquired during childhood introduces into study of the disease two conflicting factors, one or other of which is often forgotten: (1) the increased resistance to the disease from a somewhat ineffective immunization, and (2) the danger that latent infection may cause manifest and perhaps fatal disease.

If attention is limited to tuberculous infection which is so advanced that it produces cough, fever, loss of weight, and obvious physical signs, while less advanced infection which remains concealed, for a time at least, is ignored, spread of the disease in families and in the community is studied under a heavy handicap, and ancient problems concerning its contagion remain unsolved. We might with equal reason study the epidemiology of measles by limiting our attention to instances of the disease followed by pneumonia, or of small-pox by excluding all cases except those with haemorrhagic lesions.

The Pathology of Latent Tuberculosis.

I am inclined to believe that more knowledge of the pathology of tuberculosis can be obtained by careful examination of the tuberculous lesions of those who die from causes other than tuberculosis than from fatal instances of the disease. The frequency of concealed tuberculous infection is thoroughly recognized, in great part as the result of almost innumerable studies made with the tuberculin test, but the variety and severity of latent tuberculous lesions is not fully understood. Sir Arthur Newsholme[1] assembled evidence to show that there is a long latent period between exposure to infection and the appearance of the symptoms of phthisis. The frequency of calcified pulmonary nodules which may be regarded as scars of an infection acquired in childhood is well known, but it is less fully realized that one in five of adults[2] who die from causes other than tuberculosis have apical tuberculous lesions which are caseous or partly calcified.

X-ray photographs of lungs excised at autopsy furnish a satisfactory means of depicting the distribution of tuberculous lesions, particularly when calcium salts have been deposited in caseous material, or new formation of fibrous tissue has increased the density of lung tissue. They serve as a guide in dissection to scattered nodules and reveal lesions which would otherwise be discovered with much difficulty. All types of lesions which are discoverable in *x*-ray plates prepared from excised lungs can be identified in plates prepared from the living chest. Radiologists who are doubtful concerning the interpretation of latent tuberculous lesions evident in *x*-ray plates of the living chest should prepare a series of plates from lungs removed at autopsy and should identify by dissection the lesions which are revealed.

First Infection with Tuberculosis.

Tuberculosis of infancy and early childhood, which resembles that of an animal inoculated with tubercle bacilli, forms a lesion at the site of infection and quickly affects the nearest lymph nodes. The severity of tuberculosis in early infancy seems to indicate great susceptibility to the disease, but exposure of the infant to massive infection from those who tend it may explain the high mortality from tuberculosis during the first year of life. At this period general dissemination through the body accompanied by tuberculous meningitis is common. During the second year of life the mortality from tuberculosis falls rapidly, and during the next few years gradually. From the fifth to the twelfth year the death rate is lower than at any other period. It is noteworthy that during this interval of low mortality infection with tuberculosis, indicated by the tuberculin reaction, makes its appearance with

* A paper read in opening a discussion in the Section of Tuberculosis at the Annual Meeting of the British Medical Association, Edinburgh, 1927.

great frequency, but the lesions with few exceptions heal. A nodule is formed in the lung substance, and foci which are usually much larger are formed in the nearest lymph nodes. Occasionally, particularly when disease of bronchial lymph nodes is advanced, a few tubercles which undergo encapsulation are formed in distant organs such as spleen and liver,[3] but general dissemination and death are uncommon. With healing, encapsulation is followed by calcification, and scars of these first infections remain throughout adult life in lung, bronchial lymph nodes, and sometimes in other organs.

Tuberculosis in young children usually proceeds more rapidly in the lymph nodes than in the lung parenchyma, so that the lesion of bronchial lymph nodes at the hilum of the lung is often very conspicuous. Many have thought that the disease begins in the lymph nodes and spreads peripherally into the lung substance. A nodule, occasionally found with difficulty, is, as Küss[4] showed, invariably present in the lung substance, and is presumably the primary site of lodgement of tubercle bacilli which have entered by way of the bronchi. The term "hilum tuberculosis" is, it seems to me, unfortunately chosen, because it suggests that the disease has its origin at the root of the lung. In x-ray plates made during the progress of pulmonary tuberculosis in children the lesion occasionally seems to extend from the hilum to the periphery of the lung, but this deceptive appearance is caused

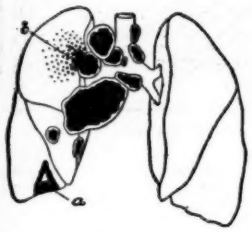


FIG. 1.

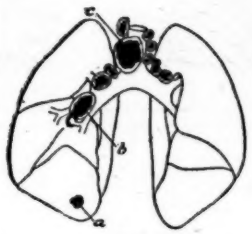


FIG. 2.

FIG. 1.—Diagram showing tuberculosis of the lungs and tracheobronchial lymph nodes with secondary extension to adjacent lung substance in a child aged 1 year. The primary focus (*a*), which contained a small cavity, was in the right lower lobe. The caseous tuberculous centre of a lymph node had penetrated the capsule at *b* and produced a secondary lesion of the adjacent right upper lobe. Death occurred with tuberculosis widely disseminated throughout the body.

FIG. 2.—Diagram showing tuberculosis of lung (*a*) and of tracheobronchial lymph nodes (*b*, *c*) with secondary extension of tuberculosis from lymph node to lung substance, in a girl aged 6. The primary focus of infection was the caseous encapsulated nodule (*a*, 1 by 1.2 cm.). The caseous centre of the lymph node (*b*) had penetrated the capsule and extended into the lung substance. The caseous centre of the large lymphoid mass (*c*) had penetrated the capsule of the node and the adjacent tracheal wall so that caseous material protruded into the lumen of the trachea just above the orifice of the right bronchus. There were tuberculous ulcers of the intestine, tuberculous peritonitis, and tuberculous salpingitis.

by the projection of three dimensions on one plane. *Post-mortem* examination occasionally shows that caseous lesions of bronchial lymph nodes have penetrated the capsule of the node and produced tuberculous pneumonia of the adjacent lung (Fig. 1), or have ulcerated through the wall of a bronchus (Fig. 2), and perhaps caused dissemination of the disease in the domain of tributary bronchial trunks, but in such instances a primary focus of infection can be found in the peripheral lung field. (Fig. 1, *a*; Fig. 2, *a*.)

Experimental studies indicate that tuberculosis is conveyed to susceptible animals with much more difficulty by way of the gastro-intestinal tract than by way of the lungs. Several years ago I had the opportunity to compare the frequency of latent tuberculosis of mesenteric lymph nodes in British and American adults.[5] In slightly more than one-fourth of young British adults examined who had died from causes other than tuberculosis, there were healed or healing tuberculous lesions of the mesenteric lymph nodes, whereas in Montreal Klotz[6] found obsolescent lesions in 8 per cent. of those examined, and in San Francisco Ophüls[7] found them in 5 per cent. I found that focal lesions of the lung were usually absent when mesenteric tuberculosis had occurred. Todd[8] has recently found that the incidence of mesenteric tuberculosis is very high in young persons in Edinburgh, and has observed that pulmonary lesions are uncommon when mesenteric lesions are numerous.

Reinfection with Tuberculosis.

Phthisis of adults, unlike the first infection of childhood, has little resemblance to tuberculosis of susceptible animals, but resembles the disease of reinfected animals. Why it selects the apex of the lung is not yet evident, but once established it tends to pursue a chronic course and remains, save in the last stages, a localized disease of the lung. The apical lesions which heal so completely that they never produce symptoms are much more numerous than those which cause progressive disease. Less than 1 in 10 of all deaths is caused by tuberculosis, whereas approximately 1 in 5 of those who die from causes other than tuberculosis have characteristic tuberculous, caseous or calcified, lesions of the pulmonary apex. The number of those having fibrous apical scars with no gross microscopic characters of tuberculosis is even greater.

Once infected, the experimental animal undergoes changes which alter its reaction to the bacteria and bacterial products (tuberculin). We have no clear understanding of the relation between hypersusceptibility in the infected animal and the resistance conferred upon it by immunization, but analogy with similar changes produced by more readily studied protein substances[9] suggests that accentuation of the inflammatory reaction following infection by the tubercle bacillus is a beneficial process which tends to overcome the second invasion.

This conception concerning the pathogenesis of phthisis has little value unless it is in harmony with changes which are evident in the human body. (1) When phthisis of adults occurs the calcified scars of a first infection can be found in the lung substance and in adjacent bronchial lymph nodes.[10] (2) Like a second infection of experimental animals, phthisis of adults pursues a chronic course, remains localized, and does not implicate the nearest lymphatic nodes. (3) When people who have not come into contact with European civilization escape tuberculosis during childhood they suffer, if infected during adult life, with a type of tuberculosis which resembles that of childhood. The susceptibility to acute forms of tuberculosis of native African troops serving in Europe has been clearly shown by Dr. Lyle Cummins.[11] The American negro not infrequently escapes infection during childhood, and exhibits acutely fatal lesions of first infection during adult life. (4) When reinfection occurs at an early age, after a still earlier first infection, it exhibits the characters of the disease of adults. The adult type of tuberculosis with localization in the apex, chronic course, and cavity formation is seldom seen during the first decade of life, but during the second decade with increasing frequency as age advances. In adolescent children after 15 years of age pulmonary tuberculosis in most instances has the characters of the adult disease.

There are two peaks upon the curve representing mortality from tuberculosis. There is one in infancy reaching a maximum during the first year of life. It is due to first infection having its origin in the lungs and bronchial lymph nodes, or, in a smaller number of cases, in the intestine and mesenteric lymph nodes. Mortality from these lesions of first infection diminishes rapidly during the second year, and then gradually during subsequent years until the fifth year. After the fifth year and during the greater part of childhood mortality is lower than at any other period of life. After the twelfth year in girls, and somewhat later in boys, the curve of mortality begins to rise and reaches a second peak in early adult life or even later. It is noteworthy that this second wave of mortality from tuberculosis is caused by lesions of reinfection having their origin with a few exceptions in the apices of the lungs.

Bacteriology of Latent Tuberculous Lesions.

My associate Dr. Aronson[12] and I have attempted to determine the frequency with which living tubercle bacilli can be recovered from latent lesions of first infection present as encapsulated and calcified nodules in the lungs and bronchial lymph nodes. Tubercle bacilli are seldom recovered from these healing nodules unless there is a latent apical lesion in the same lung, and when latent apical lesions are present living tubercle bacilli are

recovered not only when material from calcified nodules is injected into guinea-pigs, but when material from parts of the lung which contain no evidence of tuberculosis is used for inoculation. These observations indicate that living tubercle bacilli are present in the surrounding lung tissue rather than in the nodule itself. In latent lesions of the apex, on the contrary, tubercle bacilli are almost invariably found when the lesion is fibroid and caseous, and persist even after apparent healing, so that they are found in one-fourth of the fibrous apical scars which have none of the gross or microscopic characters of tuberculosis. Tubercle bacilli in most, if not all, instances seem to have disappeared from the lesion of childhood by the time the lesion of reinfection makes its appearance. Furthermore, anatomical evidence furnishes little support to the opinion that the apical lesion of adults is derived by extension from the focal lesions of childhood, for the one is seldom in continuity with the other, and not infrequently the lesion of first infection is in one lung, whereas the apical lesion of reinfection is in the opposite organ. The available evidence

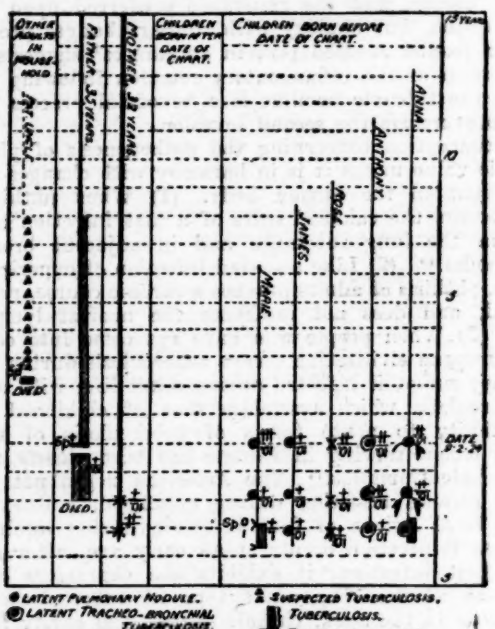


FIG. 3.—Graphic chart used to depict the occurrence of latent and clinically manifest tuberculosis in families. Vertical lines represent each member of the family, and their length corresponds with the duration in years of residence within the household. They are erected upon a horizontal line, which represents the date at which the family came under observation. Later observations are recorded below this line. Tuberculin reactions are shown by 0 (negative) or from one to three *plus* signs over the quantity in milligrams (0.01 to 1) of tuberculin used. The result of sputum examination (Sp) is indicated by zero or *plus* placed above the number of examinations.

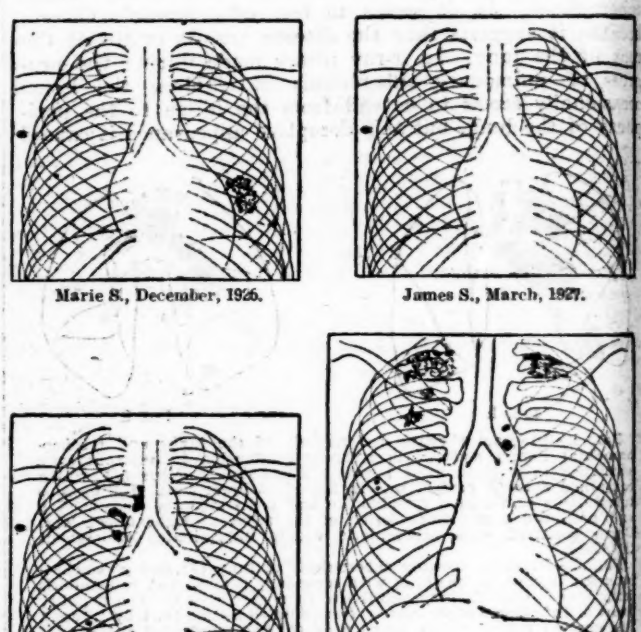
indicates that pulmonary tuberculosis of adults is not the continuation of an infection acquired in childhood, but is an exogenous reinfection.

Clinical Significance of Latent Tuberculosis.

Concealed foci of tuberculosis in lungs and lymph nodes which give none of the manifestations of pulmonary disease may be the source of serious tuberculosis in distant organs. Ophüls[13] has recently attempted to determine the primary focus of infection when tuberculosis causes recognizable disease of the genito-urinary tract, adrenals, bones, joints, etc. In seven cases of Addison's disease tuberculosis of the adrenal had apparently had its origin in a pulmonary focus, and in six instances this focus had healed. In twenty-seven cases of tuberculosis of bones and joints the primary focus of infection was in the lungs, and in one-third of these it was healed. Genito-urinary tuberculosis is always secondary to tuberculosis of lung or intestinal tract, and in 20 per cent. of instances referable to the lung the pulmonary lesion was healed.

Latent tuberculosis may be defined as tuberculous infection which is unaccompanied by significant symptoms evident to the patient or by physical signs discovered by the physician. The means at our disposal for the discovery of latent tuberculosis are the tuberculin test, which shows whether tubercle bacilli have found lodgement in some part of the body, and *x*-ray examination, which, within certain limitations, discloses the character and extent of the lesion. The term "latent," in the sense in which I have used it, has long been used in medical literature, and may be found in the writings of Laennec and Louis. Some authors have assumed that it is applicable only to lesions which are dormant or arrested, but long accepted usage gives no support to this interpretation of the word. Lesions which are unaccompanied by symptoms or physical signs are often progressive, and manifest disease is invariably preceded by a long or short period of latency.

My associate Dr. McPhedran and I[14] have undertaken a study of latent tuberculous lesions in children of families exposed to tuberculosis, and have attempted to determine whether they produce manifest disease. By means of *x*-ray examination we found that it was possible to discover all types of lesions which can be recognized in *x*-ray plates



Marie S., December, 1926. James S., March, 1927.

Anthony S., February, 1927. Anna S., June, 1927.

FIG. 4.—Diagrams prepared from *x*-ray films to show the position of the lesion in the lungs of children of the family shown in Fig. 3.

of excised lungs and identified by subsequent dissection. Examination of members of families exposed to contact with tuberculosis showed that latent lesions were more numerous and more extensive among them than in families which had no contact with the disease. The severity of infection bore a measurable relation to the elimination of tubercle bacilli by the tuberculous member of the family, and to the duration of exposure to contact with the micro-organism. Transitional stages from latent to manifest disease occurred, and it became evident that it is often possible within certain limitations to predict clinically manifest disease long before it makes its appearance.

These observations have brought about important changes in our procedures for the prophylactic treatment of tuberculosis. Families are studied as units and the progress of infection in them determined. The usual method of sputum examination is the best means for determining whether members of a family are exposed to present danger of contagion, but latent infection in members of a family may serve as an index of past exposure to open tuberculosis. We have prepared for each family under the care of our out-patient department a graphic chart (Fig 3) which records how long each member of the household has been exposed to contact with tuberculosis, and shows for each the presence or absence of a tuberculin reaction, the character of any latent tuberculous lesions revealed by *x*-ray examination (Fig. 4), and the presence or absence

of manifest disease which has been recognized by symptoms and physical signs.

The children of the family shown in the chart (Fig. 3) were exposed to tuberculosis of the father and of the uncle. Sputum of both contained tubercle bacilli and they were careless in their habits. Marie, when first seen, had an intense tuberculin reaction and a small nodule in the lung. Two years later a focus of infiltration had appeared in the left lung and râles were heard over it. Anthony had advanced tracheo-bronchial tuberculosis. Anna, when first seen, had nodules in the lungs and a latent apical lesion on the right side. One year later there were bilateral apical lesions. After another year these lesions had extended and râles were heard over the apices.

This study has emphasized the value of the tuberculin reaction as a means of recognizing tuberculosis in children. Its significance, as is well known, diminishes with increasing age from infancy to adult life, when among inhabitants of large cities almost all react. In our group of families exposed to open tuberculosis over 80 per cent. have acquired an active tuberculin reaction before the age of 5 years, and 90 per cent. at the age of 10, whereas at the same time among "non-contact" families only 23 per cent. react at the age of 5, and 62 per cent. between the ages of 15 and 20 years.

Examination by x rays gives trustworthy evidence concerning the frequency of latent tuberculosis among children exposed to contact with open tuberculosis and furnishes a means by which the severity of infection may be measured. Focal lesions within the lung substance are readily recognized if the characters of the lesions found at autopsy are kept in mind. Blood vessels directed in the axis of the x ray may be mistaken for calcified nodules. Thirty per cent. of our children who were exposed to tuberculosis in their families had pulmonary nodules, as compared with 17 per cent. of the children who were not thus exposed. More significant is the recognition of lesions of the tracheo-bronchial lymph nodes, for although anatomical study (Fig. 5, from the lungs of a youth who had been in contact with open tuberculosis) shows that they invariably accompany focal pulmonary lesions, they are seldom recognizable in x-ray films unless they have attained considerable size. Tuberculosis of tracheo-bronchial lymph nodes was found in 23 per cent. of children in contact with open tuberculosis, and in only 4.5 per cent. of children of non-contact families. The average duration of contact with open tuberculosis when tuberculosis of tracheo-bronchial lymph nodes is recognized has been four years and five months, and the lesion is seldom found in those who have been exposed during a period of less than two years.

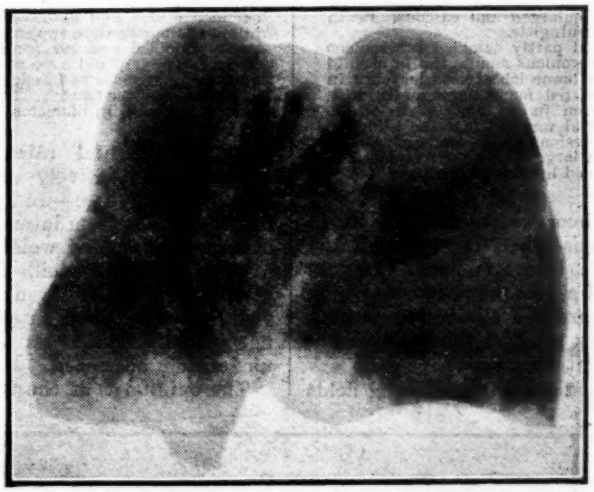


FIG. 5.—Reproduction of an x-ray film prepared from the lungs, removed at necropsy, of a youth of 19 years, who died with purpura haemorrhagica and anaemia. His father died of pulmonary tuberculosis at the age of 44. Five calcified nodules from 2 to 4 mm. in diameter were found in the upper lobe of the right lung (reversed in the figure), and there were several lymph nodes containing calcified masses at the hilum of the lung. At the right of the bifurcation of the trachea there was lymphoid tissue replaced in great part by irregularly distributed calcified material (4 by 1.9 cm.). Caseous, partly calcified and encapsulated tubercles were sparsely scattered in the liver and spleen.

Of graver import is the occurrence of latent apical tuberculosis in adolescent children. At the time of our report one year ago this lesion was found in 1.6 per cent. of the children of families with open tuberculosis, but subsequently the incidence has increased to 3.2 per cent. Latent apical disease has not been found in children of non-contact families. Among those in whom latent apical tuberculosis has made its appearance, including adolescent children and adults, the average duration of contact has been seven years and 11 months, but this is evidently not the minimal period of contact required to produce the lesion.

Parallel with the frequent occurrence of such latent lesions of tuberculosis in families with open tuberculosis, there is high incidence of clinically manifest tuberculosis with symptoms and physical signs. In the group of contact families 9 per cent. of children among those examined had manifest tuberculosis. No manifest disease has appeared in the non-contact families.

This study has shown that the usual method of sputum examination, repeated at short intervals, is an effective means of measuring the danger to which an infected individual subjects his family. The frequency of tuberculin reactions, of lesions recognized by x-ray examination, and of clinically manifest disease, was much lower in families in which a member suffered from pulmonary tuberculosis but had no tubercle bacilli in his sputum than in families exposed to open tuberculosis, and was only slightly greater than in those having no contact with the disease. There was another group of families in which some members had symptoms and other evidence suggesting tuberculosis. In these families with suspected tuberculosis the incidence of infection was not materially greater than in non-contact families.

Isolated nodules recognized in the peripheral lung field in most instances represent well circumscribed infections and have little clinical significance. Although they indicate that tuberculous infection has occurred and has doubtless conferred some degree of immunity upon the child, they do not exclude the possibility of progressive disease or of reinfection.

Tuberculosis of Tracheo-bronchial Lymph Nodes.

Tuberculosis of the tracheo-bronchial lymph nodes is recognized by clearly defined, oval, granular shadows in contact with the larger bronchial trunks at the hilum of the lung or in immediate contact with the trachea and often below the bifurcation (Fig. 4). Accentuation of the hilum shadow or thickening of the mediastinum is seldom due to tuberculosis of lymph nodes and does not aid in the recognition of the disease. Lesions of the tracheo-bronchial lymph nodes often attain considerable size, and in such instances indicate that infection is advanced. Occasionally very large groups of caseous lymph nodes are well defined in x-ray plates, but comparison with x-ray films prepared from lungs removed at autopsy shows that tuberculous lesions of lymph nodes with few exceptions are recognizable only when calcium salts have been deposited within the caseous material. It has been claimed that these lesions of bronchial lymph nodes are never visible except when they are calcified and completely healed and no longer a source of danger. This view is certainly incorrect. When there is impregnation with calcium salts scarcely sufficient to increase the consistency of caseous material, lesions become clearly defined in x-ray films. Furthermore, a lesion which is arrested and calcified in one part may be progressive in another. Figure 6 represents the lung of a child; there are in one part nodules of lungs and of lymph nodes (a, b) which are encapsulated and calcified, and in another part progressive caseous lesions (c, d) which have produced death by general dissemination. It is probable that the two kinds of lesions, since they occur in a child 2 years of age, began at approximately the same time. Figure 7 represents the lungs of a child 9 months of age with caseous and calcified foci in the lungs and bronchial lymph nodes. Death occurred with disseminated tuberculosis and tuberculous meningitis.

Although I believe that recognizable lesions of the tracheo-bronchial lymph nodes in many cases cause no disturbance of the health and heal completely, I think that they should be regarded with grave concern, especially when they appear during the first decade or the beginning of the second decade of life. This opinion is

based upon the frequent coexistence of tuberculosis of the tracheo-bronchial lymph nodes and clinically manifest lesions of the lungs in children of families exposed to open tuberculosis, and the development of manifest tuberculosis in another group of children in whom tuberculosis of the tracheo-bronchial lymph nodes has been recognized. All of our children who exhibit this lesion have been placed

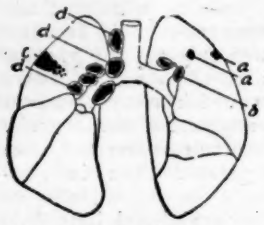


FIG. 6.

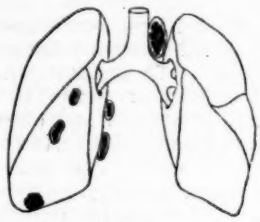


FIG. 7.

FIG. 6.—Diagram of lungs with caseous calcified lymph nodes in one lung (*b*) and with progressive caseous lesions in the other (*c*, *d*) in a child 2 years of age. In the left lung there were two small caseous encapsulated nodules at the hilum of the lung; nearby there was a lymph node replaced in great part by a tuberculous lesion with caseous, partly calcified centre and fibrous capsule. In the right upper lobe below the pleura there was a wedge-shaped area of consolidation, in large part caseous and surrounded by numerous small tubercles. The adjacent lymph nodes were much enlarged and caseous. Death occurred as the result of tuberculous meningitis.

FIG. 7.—Diagram showing encapsulated partly calcified tuberculous foci in lungs and lymph nodes with tuberculous meningitis in a child aged 9 months. At the base of the left lower lobe (posterior view in diagram) there was a caseous encapsulated focus impregnated with calcium, so that opaque spots were seen in an *x*-ray plate of the excised lung, though the caseous material was soft. At the hilum of the lobe there were lymph nodes with lesions of the same character. On the right of the trachea there was a large lymph node replaced in great part by caseous material surrounded by fibrous tissue.

so far as possible under conditions which are known to retard the progress of tuberculosis when it is manifested by symptoms and physical signs. Effort is made to avoid malnutrition and fatigue. I feel sure that measures which are effective in retarding the progress of clinically manifest tuberculosis will in most instances prevent the transformation of latent infection into evident disease.

The presence of soft shadows in the peripheral lung fields recognizable in *x*-ray plates of the chest is often difficult to interpret, and introduces a consideration of the diagnosis of pulmonary tuberculosis in children. They are at times unaccompanied by symptoms or physical signs. The following criteria indicate that these soft shadows are the result of tuberculous infiltration: (1) occurrence in a child in contact with tuberculosis; (2) an active tuberculin reaction (with 0.01 mg. of old tuberculin); (3) association with lesions of adjacent lymph nodes recognizable in the *x*-ray plates.

Latent Apical Tuberculosis of Adolescent Children.

Latent apical tuberculosis is encountered with increasing frequency as age increases during the second decade of life, and is evidently in many instances the precursor of phthisis of early adult life. Examination of adolescent children of families in contact with open tuberculosis has revealed almost all of our cases of latent apical disease, but in a few instances it has been discovered in others. It occurs only when contact with open tuberculosis has been long continued. In *x*-ray plates it is recognizable as a mottled shadow in one or the other apex, evident in the second interspace, and extending into the third and even into the fourth interspace. The extent and density of lesions which are unaccompanied by symptoms and physical signs are at times astonishing. The anatomical characters of apical lesions depicted in *x*-ray plates when unassociated with clinical evidence of the disease do not differ from lesions with which there have been slightly elevated tempera-

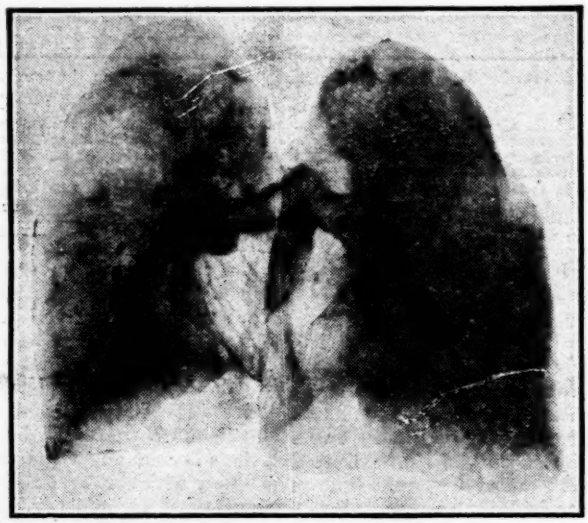


FIG. 8.—Reproduction of an *x*-ray film prepared from the lungs of a boy aged 18, showing latent apical tuberculosis on the right side (reversed in the figure) and calcified nodules in the lung and adjacent lymph nodes on the left side. Death occurred as the result of peritonitis following laparotomy. At the right apex in continuity with the puckered pleura there was fibrous and caseous tissue forming a mass 3 cm. across. In the left upper lobe there was a small calcified nodule and larger firmly calcified nodules in lymph nodes at the hilum of the lobe. In the substance of the left lower lobe and in adjacent lymph nodes there were similar lesions.

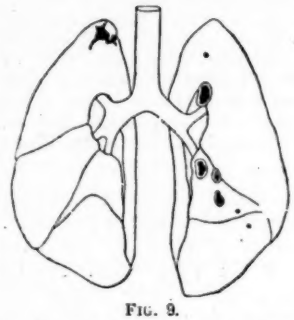


FIG. 9.

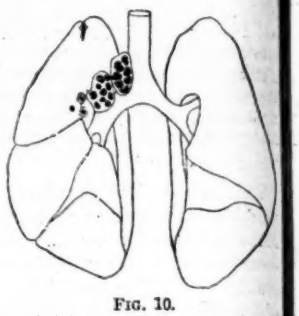


FIG. 10.

FIG. 9.—Diagram showing the distribution of lesions shown in Fig. 8 (in which right and left are reversed).

FIG. 10.—Diagram showing fibrous scar of apex and advanced calcified tuberculous lesions of tracheo-bronchial lymph nodes in a girl aged 18. Death occurred as the result of typhoid fever. At the right apex extending inward from the puckered pleura there was a thick fibrous scar 2.5 cm. in length. In the substance of the right upper lobe there was a nodule 0.5 cm. in diameter with caseous, partly calcified centre and fibrous capsule. In the lung substance near the hilum of the lobe were two small lymph nodes which contained caseous, partly calcified and encapsulated nodules. At the hilum of the lobe was a large lymphoid mass studded with caseous and calcified nodules, and a similar mass was wedged between the inner surface of the right upper lobe and the trachea. The spleen contained encapsulated tubercles from 1 to 2 mm. in diameter, with caseous and calcified centres.

ture, cough, and râles heard over the affected apex. During the relatively short period of our observations—namely, four years—we have had opportunities of following the transition from latent apical disease to advanced tuberculosis with loss of weight, cavity formation, and appearance of tubercle bacilli in the sputum. It is noteworthy that adolescent children with latent apical lesions may be well nourished and in good health. Loss of weight does not usually make its appearance until the disease is moderately advanced.

The opinion that the tuberculosis of adults has its origin in childhood has long been maintained and is still widely held. Von Behring claimed that all tuberculosis had its origin in early infancy, but most of those who think that phthisis does not originate in adult life believe that it is the continuation of an infection acquired at any time during the period when focal lesions are making their appearance in lungs and bronchial lymph nodes. Nevertheless, it may be noted that few of those who discuss the subject define the relation of these lesions to subsequent apical disease in adults. There is, as I have shown, no evidence that tuberculosis of adult life is the continuation of the first infection of childhood. Nevertheless, it is evident that latent apical tuberculosis of older children may gradually develop into phthisis of early adult life. The transition may be followed by means of radiological examinations.

Latent apical lesions of adolescents which have all of the characters of reinfection are in a considerable number of instances associated with advanced tuberculous tracheo-bronchial lesions which have undergone calcification (Figs. 8, 9, and 10). These massive tracheo-bronchial lesions accompanied by latent apical tuberculosis with few exceptions occur in children who have been exposed to intimate contact with open tuberculosis for several years, and apical

disease is superimposed upon the first infection because resulting immunization is an ineffective protection against tubercle bacilli in vast numbers.

Conclusions.

Latent tuberculous lesions of the lungs and tracheo-bronchial lymph nodes are revealed by radiological examination, and when they are accompanied by an active tuberculin reaction it may be assumed that they are not dormant or healed. These lesions, well known to pathologists, may have grave clinical significance. They are not infrequently the source of tuberculosis of meninges, bone, genito-urinary system, adrenals, and other organs; they may produce clinically recognizable pulmonary tuberculosis of the type of childhood, or, as an index of exposure to tuberculous infection, may be followed by the adult type of pulmonary disease.

Latent tuberculosis of the tracheo-bronchial lymph nodes of young children and latent apical tuberculosis of children during the second decade of life indicate the presence of grave infection, and may forewarn against clinically manifest disease. These latent lesions appear with great frequency in families exposed to open tuberculosis. All members of families in contact with tuberculosis should be given repeated tuberculin tests and radiological examinations even though they appear to be in good health. When these examinations reveal grave latent disease the well known measures directed to retard the progress of tuberculosis will prevent the development of manifest disease.

Tuberculous infection in childhood increases resistance to the disease, but is at the same time a source of danger. Recognition and control of latent infection are effective means of preventing tuberculosis.

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DISCUSSION.

Dr. R. G. CANTI (London) said that the question of the primary tuberculous focus in the lung in childhood had not received much attention in this country. He had reported in the *Quarterly Journal of Medicine* (1919) 84 consecutive *post-mortem* examinations on children under 10; 16 were tuberculous, and of these 10 had shown the primary lung focus. Further experience had convinced him that Ghon's theory of the relation of primary focus and glandular infection was tenable. He showed diagrams of the scheme of lymphatic drainage from the lung, and said it was possible to predict from the glands infected in a particular case the position of the primary focus in the lung. He supported this by diagrams of three cases. He believed it could be proved that the mediastinal glands were secondary to the lung focus, since where there was a lung focus there were tuberculous glands in the corresponding mediastinum, and where the mediastinal glands were tuberculous a tuberculous focus was present in the lung. Moreover, anatomical study had shown those glands to be tuberculous which would be expected to be so affected if the lung focus was primary. The changes in the glands never appeared older than those in the lung focus. He thought it was also proved that the lung focus was not secondary to one elsewhere in the body. In the majority of cases showing a lung affection no focus could be found outside the thorax. In most cases with a focus outside the thorax there was no lung lesion. If the lung infection was secondary to some other invasion—as, for example, in the abdomen—the type of tubercle bacilli would be bovine; tuberculous foci in the lung yielded the human type of bacillus. The human bacillus had no predilection for lung tissue; feeding experiments had shown that the lesions produced by human and bovine bacilli were the same, the greatest concentration of infection being abdominal. This point had an interesting confirmation in the work of Scott in Hong-Kong. In conclusion, Dr. Canti showed, for Dr. Hadfield of Bristol, five museum specimens from five consecutive cases of children dying of tuberculosis in which Dr. Hadfield had been able to demonstrate the primary lung focus.

Dr. P. F. ARMAND-DELILLE (Paris) said that, contrary to general opinion, tuberculosis in children was found in the varied adult types. Most valuable information was to be obtained from comparing lung shadows and autopsy findings. He described his technique for the study of lungs *post mortem* in their proper relative positions, and showed how it was possible thus to find every important lesion and compare it with *x*-ray shadows. Investigation on these lines might reveal one of two conditions—tuberculosis apparently limited to the tracheo-bronchial glands, or associated with different forms of lung tuberculosis. In nearly every case careful examination indicated the primary lung lesions. These might be (1) diffuse miliary tuberculosis in its various forms; (2) localized lesions, usually broncho-pneumonic lobar infiltrations; (3) unilateral lesions of a whole lung; and (4) bilateral terminal lesions. His experience had convinced him that normal lungs showed *x*-ray hilum shadows which bore no relation to enlarged bronchial glands. Even when these glands became enormous caseous tumours their shadows might be lost in the larger shadow of the cardio-vascular apparatus. *Post-mortem* findings were gradually aiding in the interpretation of lung shadows from a prognostic point of view; it was possible to correlate progressive modification in the character of shadows with analogous anatomical evolution. Tuberculous bronchial gland tumours frequently occurred in the middle of the mediastinum, where their shadows could but rarely be observed because they were usually masked by the cardio-vascular apparatus. So-called "peri-hilar shadows" were not produced by the glands. The primary focus was seldom detectible in the *x*-ray picture, as it was often localized at the opposite pulmonary base behind the shadow of the heart, liver, stomach, or spleen. In lung lesions a study of well taken plates might reveal miliary tuberculosis before the characteristic signs and symptoms had appeared. It was difficult from *x* rays alone to arrive at the accurate diagnosis of the type of pathological lesion present. A series of *x*-ray photographs during treatment showed progressively disappearing shadows, while tubercle bacilli were still found in the sputum. Dr. Armand-Delille illustrated his remarks with many beautiful slides of sections and comparative *x*-ray plates.

VOMITING AFTER OPERATIONS ON THE STOMACH.

BY

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VOMITING coming on within a day or two of an operation on the stomach, whether a gastro-jejunostomy, partial resection, or other surgical procedure, is not uncommon, and may be serious or even fatal. In some cases it is merely due to the anaesthetic, or to blood in the stomach. In that event it is likely soon to cease. Repeated vomiting, that persists for days and puts the patient's life in danger, may be due to one of the following causes:

1. *Vicious Circle.*—Years ago this was frequent and often fatal; nowadays, in good hands, it is seldom seen. It is due, of course, to a bad lie of the efferent loop of jejunum; the afferent loop may have been too long, or the efferent loop may fall away from the opening in the stomach so sharply that the duodenal contents re-enter the stomach and cannot find a way out. The vomit is copious and contains abundant bile. Prevention is easy. It is only necessary to use a short afferent loop of jejunum in the operation of gastro-jejunostomy, and to insert a stitch, after completing the anastomosis, to anchor the efferent loop to the transverse mesocolon an inch or two to the

right of the hole in the mesocolon, and this complication will not be seen.

2. *Infection of the Suture Line.*—Several French surgeons maintain that vomiting beginning a couple of days after the operation may be due to infection of the peritoneum around the suture line. It is quite possible that this may be true, but I have no recollection of seeing it.

3. *Adhesion of the Suture Line.*—I am persuaded that the commonest cause of persistent and sometimes dangerous vomiting after gastric operations is a sticking together of the anterior and posterior suture lines in the mucosa. Of course, a careless surgeon may actually sew them together, at any rate at a point or two, but apart from this gross technical error it is possible for the cut edges to adhere. If this occurs there will be copious and persistent vomiting, which differs from that of vicious circle in that no bile is brought up. The bile cannot enter the stomach, and the gastric contents cannot leave it. I first learnt of this danger after performing gastro-jejunostomy for pyloric ulcer.

The patient, a woman, vomited about twice a day for three days, bringing up all she took and much gastric juice besides, but no bile. I reopened the abdomen, and found the stomach very large and tense, but the jejunum empty. On opening the jejunum and inserting a finger it was perfectly plain that the anterior and posterior edges at the anastomosis had stuck together. It required some little force to separate them, but they were not bridged by a stitch. After various other complications she recovered.

A few weeks after a patient with cancer, on whom I had performed a partial resection by the Polya technique, began to vomit the day after operation, and brought up all she was given, and much gastric juice besides, for three days. I reopened, and found a huge tensely distended stomach and an empty jejunum. Here also exploration with a finger inside showed that the suture line had adhered tightly, but there was no stitch bridging it. She died.

These two cases brought to my mind other patients at an earlier date, who gave me great anxiety for a few days by persistent vomiting, which then stopped. It is quite likely, of course, that sufficient pressure might be developed in the stomach to force the passage; in fact, in both my cases the stomach was extraordinarily tense. If that happened the condition would be relieved.

In my opinion, then, adherence of the suture line is a not uncommon, and potentially very serious, complication of gastric surgery. Fortunately it is easily prevented. Ever since the experience related above I have inserted a piece of corrugated rubber dam, a little larger than a postage stamp, within the lumen of the anastomosis, fixing it by a fine catgut stitch to the mucosa of the stomach so as to overlap the suture line and point the way to the efferent loop of jejunum. I have had no trouble with vomiting after stomach operations since adopting this device. If it be objected that one has to take the clamps off before completing the anterior suture line, in order to insert the piece of dam, the reply is that that ought to be done in any case to make certain that there is no bleeding.

Intestinal anastomoses can be made safe and pervious by the same device.

THE ETIOLOGY AND TREATMENT OF PSORIASIS.

BY

J. H. HEANEY, M.D.

THE baffling nature of the cause of psoriasis is illustrated by the fact that one dermatologist has even called in the aid of embryology to show an analogy with the scales of lizards. He suggests that psoriasis is a "hark back" defence against cold, since it occurs almost invariably on the elbows and knees, which are the most thinly protected.

The most obvious proposition is that psoriasis is a parasitic disease, but there is no cultural or microscopic confirmation of this. The circumstantial evidence consists in (1) well authenticated cases of direct infection; (2) the marginal method of extension; (3) an observed connexion with osteo-arthritis; (4) the fact that psoriasis resembles rheumatism in seasonal incidence and tendency to recurrence; and (5) the curative action of parasiticidal medicaments.

There can be no doubt that poison attacks the skin by way of the blood stream, just as it appears certain that seborrhoea, in the beginning at least, is a more or less widely spread local infection connected with the bottle bacillus, and later associated with certain cocci. Confirmation of this is afforded by the sudden outbursts of activity in old-standing cases, by the symmetrical distribution of the lesions in acute cases, and by acute forms accompanied by asthma and headache, the last named suggesting sensitization. The evidence adduced in favour of other causes is so unconvincing that it might almost be cited in favour of the parasitic theory.

It has been suggested that psoriasis is a stage of seborrhoeic dermatitis, and the case of a patient, now aged 50, who has been under observation for some years will illustrate what is meant. The disease began as a profuse dandruff in early youth; later greasy scaly patches appeared, and still later dry patches on the scalp, followed by dry "spots" here and there on the body. Dry patches subsequently developed on the elbows and lumbar region, and still later extensive dry scaly patches on both shins. This, with two acute attacks of "spots" on the face and hands, extended over the age period 14 to 50. There is now baldness of the seborrhoeic character and very little dandruff, a psoriatic patch on the lumbar region, some involvement over the elbows and shins, and a few patches more truly seborrhoeic in type here and there on the body.

Beginning on the head and extending downwards, this is a classical case of seborrhoea, but if the history and the uppermost lesions are ignored there remains a typical psoriasis of the back, elbows, and shins, extending upwards or not at all. Some say that the two diseases may coexist. At first sight the view that psoriasis is a stage of seborrhoea appears temptingly obvious. What more likely than that a seborrhoeic dermatitis is the forerunner of psoriasis, sometimes in the same subject, as possibly in the case described, or that a seborrhoeic ancestor may have descendants with bald heads and a typical psoriasis beginning below? It is not disputed that a tendency to baldness is hereditary, and it is generally conceded that there is a predisposing disposition to psoriasis.

If it be taken for granted, then, that one of the factors in seborrhoea becomes "fixed" in the blood, and later may cause a psoriasis, which is it? The vegetable parasites to which the bottle bacillus belongs do not usually, if ever, set up blood states, but the cocci do. Moreover, a vaccine of the bottle bacilli has no effect on psoriasis. On the other hand, chrysarobin has a special lethal effect on vegetable parasites and an almost specific action on psoriasis. Used locally in various strengths it is stimulant or irritant; it may stimulate growth of hair or cause a dermatitis. It has a special action on primitive vegetable organisms, and kills the spores of ringworm. Two local actions stand out therapeutically, the stimulant and the parasiticidal. Recently a patient with chronic psoriasis came under observation. The eruption was almost universal, and the irritation and fall of scales were such that it was feared chrysarobin might precipitate a pityriasis rubra. No treatment had any effect until chrysarobin was prescribed. It is difficult to think of a stimulant effect here. There remains the parasiticidal action and the further possible effect of absorption into the blood stream.

Whitla wrote forty years ago that chrysarobin ointment rubbed into one side of the body alone cured the lesions on the opposite side; such an event could only happen through the agency of the blood. How does chrysarobin act in the blood—directly, as salvarsan does, or indirectly? If indirectly, it is possible that, since chrysarobin taken by the mouth induces a rise of temperature, it might give rise to a copula and complement of its own. The complement, not being specific, might unite with the copula of the disease—another instance of complement deviation—and in that way, or partly in that way, might effect a cure. This would presume a previous deficiency of complement in the blood. Apart from psoriasis, if it were found that chrysarobin was a ready and efficient means of producing complement, its use might become greatly extended.

On the other hand, chrysarobin may act directly on the "poison" both in the blood and in the skin lesions. It is found that the typically seborrhoeic lesions respond better to mercury and tar, but that the drier and more

chronic ones require chrysarobin. This would point to the presence of a particularly obstinate descendant of the bottle bacillus in these lesions, and to the predominance of the bottle bacillus itself and the special cocci in the more seborrhoeic lesions. In conditions due to the bottle bacillus, such as dandruff, nothing answers better than chrysarobin in weak strength, but where there is a combination of the bacilli and cocci, as in the scaly, greasy forms, chrysarobin shows only irritative properties and does harm, mercury and tar being much more efficient.

For use in the case described above a 0.2 per cent. colloidal solution of chrysarobin was made by Messrs. Crookes with a view to intravenous use; it is not stable in strong solutions at present. Quick progress in so chronic a case is not to be expected, but the results are far better than any hitherto obtained. A daily dose of 30 drops in water one hour after dinner is being given by the mouth, and the solution is well rubbed into the lesions night and morning with a pledget of cotton-wool. The scales are not previously removed; they seem to become partly absorbed where healing is occurring. This solution is the best I have yet tried for dandruff, and seems to promise a permanent cure after short use. It does not discolour the hair, but rather gives it a glint.

It might be concluded, then, on observed facts and the result of treatment—principally the differing actions of chrysarobin—that seborrhoea is the forerunner of psoriasis. Just as we find a gouty joint in the thin, anaemic descendant of a ruddy and gouty ancestor, so psoriasis may occur in the classically accepted form without concomitant sign of its seborrhoeic ancestor. What has been said about treatment was in the first place intended to clarify the etiology, but seems of some importance in itself. Thus the suggested intravenous injections in properly calculated doses might effect a permanent cure of even the most inveterate psoriasis.

It may be added that in the case of seborrhoea recorded acute gout developed at the age of 36, but the two diseases showed no other common factor except the general good health of the subject.

DIRECT OBSERVATION OF THE CIRCULATION IN THE LIVING LIVER.

BY

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USING one-quarter to half sized toads (pithed) I have been able, by laying a lobe of the liver on a sheet of glass on the microscope stage, to observe the circulation of the blood in the liver sinusoids and branches of the hepatic vein, under a low power. No cover-glass is required, and no solution of any sort is put in contact with the liver. The liver cells are clearly seen and the course of the blood flowing in the sinusoids (capillaries) can be accurately followed.

The liver circulation is now open to direct observation. Some years ago Leonard Hill greatly extended the microscopic study of the living tissue by his observation of the circulation in the glomerulus of the kidney, and the principle guiding me was the belief that organs apparently too thick for direct observation under the microscope in the adult might not prove so if the observation was made at an earlier stage of growth.

I have noted several times that a pulse may be apparent in the liver sinusoids and in branches of the hepatic veins. It appears to be a pulse of arrest of blood current, due to the contraction of the auricle. It will be easily understood that the blood flows from the liver through auricle into ventricle during diastole of the auricle and ventricle, and when the auricle contracts there is a retardation of the blood current in the liver sinusoids and hepatic veins.

Hence the description given by Sir James Mackenzie in his treatise on the heart is confirmed in great part. If the auricle is able to contract, the pulsation in the liver sinusoids and hepatic veins is auricular in time—that is, the *a* wave of the liver pulse is more or less synchronous with the *a* wave in the jugular pulse. If the auricle fibrillates and no proper contraction occurs it acts as a passive receiving chamber, and the systole of the ventricle becomes the retarding agent on the circulation in the liver sinusoids and hepatic veins. Of course this retardation of blood current would be propagated to some extent to the portal vein and to the hepatic artery. Hence the pulse described in the portal vein must have, as one of its factors of origin, this retardation.

Mackenzie believed at one time that the auricle would have to be hypertrophied to produce an auricular form of liver pulse. He also believed an auricular form of liver pulse was a sign of tricuspid stenosis. Latterly he, as stated in his treatise, found cases of auricular liver pulse with no stenosis of the tricuspid valves. Drs. Turnbull and Wiel described such a case.

It will be seen from the foregoing observations that an auricular form of pulse must exist in the liver because the pulse is created in great part simply by retardation and arrest of the blood flow out of the liver. On systole of the auricle the liver swells as the blood flow is arrested because blood is continuously coming to it by the hepatic artery and the portal vein. The demonstration of that pulse is a matter of technique. It would be easier to demonstrate with swelling of the liver sinusoids in cardiac disease and enlargement of the organ. It would not require any hypertrophy of the auricle or tricuspid stenosis to be present. The auricle not only distends the liver—it dams the outflow. Of course, regurgitation of blood into the hepatic veins would add to some extent to the distension of the liver.

It is obvious that the shock of retardation of blood flow falls in great part on the liver cells. This shock is greatly increased when the auricle is practically non-contracting and the ventricle in its systole regurgitates blood through the auricle to the inferior vena cava. The blood pressure in the liver sinusoids must rise, and pulsation with increased capillary pressure is always damaging to cell life. It is apparent in bedsores, where the capillary pressure in the area of contact with the bed is raised by the compression of the venous outlets towards the value of the pressure in the entering arteries. Increased pressure in the capillaries with pulsating shock is disintegrative of cell life.

In the cardiac liver Sims Woodhead notes (*Practical Pathology*, p. 253):

> "that the central or hepatic vein is considerably dilated and the lobules are distinguished more readily than in the normal liver. The capillaries leading to this central opening are also dilated. . . . The liver cells between the dilated capillaries are atrophied, etc. . . . Later the liver cells may have disappeared from the immediate neighbourhood of the central vein."

It will be noted from this description that the pathology follows physiological findings. The pulse of retardation (auricular form normally present) when exaggerated falls first on the hepatic veins and the liver sinusoids that feed them. Similarly with the ventricular form of pulse of retardation.

But the liver pulse differs from any other form of pulse in that it has three components:

> A. The retardation of blood flow by the shuttering off, as it were, of the blood stream through contraction of the auricle.
>
> B. Where the auricle is passive as a shuttering off agent, the ventricular systole acts similarly. In both A and B some blood may be driven back into the hepatic veins, but more in the case of B.
>
> C. While A or B is in operation the liver swells through the entry of fresh blood by the portal vein and hepatic artery.

Consequently the fall in the liver pulse tracing is due to blood flowing unimpeded out of the liver.

This method of direct microscopical investigation of the liver will lead to further results. The pressure in the liver sinusoids will be measured and light thrown on the problem of the formation of liver lymph. The reactions, if any, of liver sinusoids (capillaries) to various stimuli, etc., are now open to investigation. The question of nerve stimulation and its effects on the liver will no doubt in time be submitted to direct visual examination; and perhaps in the future micro-chemical reactions in the living animal may reveal something of the working of the liver.

I am indebted to the Medical Research Council for the loan of apparatus.

THE CLINICAL VALUE OF ANDREWES'S DIAZO TEST IN RENAL INEFFICIENCY.

BY

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AND

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In 1924 C. H. Andrewes[1] described an unexplained diazo colour reaction which he found only in uraemic serums. He was working on van den Bergh's test, and noted this peculiar colour reaction incidentally. His procedure was as follows:

> To one volume of serum two volumes of alcohol were added. The mixture was centrifuged and the alcoholic supernatant layer removed. To four volumes of this alcoholic extract were added two volumes of alcohol and one volume of freshly prepared diazo reagent, as in van den Bergh's test. In uraemia the mixture slowly developed a brown-buff colour. It was often necessary to let this mixture stand for twenty-four hours at room temperature to obtain full colour development. At the end of this time an addition of a slight excess of strong soda solution (10 to 40 per cent.) produced a cherry-red colour. This latter was the characteristic part of the test. The colour was fleeting. It lasted for a few seconds up to half an hour or so, depending on the concentration of the unknown substance responsible for the colour.

Andrewes obtained a positive reaction in eight cases of uraemia with blood ureas ranging from 220 to 650 mg. per 100 c.cm. Five other cases of nephritis with blood ureas of 40 to 275 mg. gave negative reactions. Twenty-two other patients suffering from various diseases gave negative reactions. Normal serums were negative (Tables I and II). Andrewes made a number of experiments to try to discover the cause of his reaction. He excluded urea, uric acid, creatinine, and proteins. Normal urine, he stated, did not give the reaction. In only one out of three instances in which the cerebro-spinal fluid was examined was a positive reaction obtained, and in this there was slight contamination with blood. In three rabbits with blood ureas of 100 to 300 mg. per 100 c.cm. the reaction was negative. Two of these had experimental nephritis.

L. F. Hewitt[4] confirmed Andrewes's work. He found the reaction limited to uraemia. He simplified the method as follows:

> After adding the diazo reagent to the alcoholic extract of serum or plasma the mixture was boiled thoroughly for about half a minute. The maximum brown-buff colour was thus obtained in a few seconds instead of twenty-four hours. The soda was added at once while the solution was still hot. The reaction thus became very simple and a serviceable clinical test.

Hewitt's tentative suggestion, after performing a large number of chemical experiments to ascertain the cause of the reaction, was that a cyclic amine such as histamine or tyramine might be responsible. Contrary to Andrewes's experience, Hewitt found that alcoholic extracts of urines sometimes gave a reaction which appeared very similar to that in the blood. He noted negative reactions in two infants with uraemia and high blood ureas. In each of these cases there was hyperbilirubinaemia instead of the usual hypobilirubinaemia.

Rabinowitch[5] in Canada confirmed the value of Andrewes's reaction in patients with marked retention of waste products due to kidney damage. He found positive reactions before the blood creatinine reached 5 mg. per 100 c.cm. One of his cases with an initial positive reaction recovered. He suggested that defective elimination was probably not the only factor responsible for the reaction. Becher[2] in Germany published a paper on the diazo reaction in alkaline solution shortly after Andrewes, but his technique was essentially different from that of Andrewes, and from our own work we are satisfied that Becher's reaction could not have been given by the substance responsible for Andrewes's reaction.

Blotner and Fitz[3] in the United States of America obtained positive reactions in cases with much lower blood ureas than has been experienced by other workers (Table I and II). They made the following additional points.

(*a*) The reaction was of prognostic value in clinical work. A high blood urea was not so significant when accompanied by a negative, as when accompanied by a positive, reaction. The test was of value in differentiating renal coma from other types of coma.

(*b*) The reaction was positive in two nephrectomized rabbits one or two days after removal of the kidneys.

(*c*) A dog was nephrectomized, and when Andrewes's reaction was positive an extract of about 33 c.cm. serum was made, partially purified, dissolved in physiological saline, and injected intravenously into a rabbit. The rabbit showed no toxic symptoms.

(*d*) The ascitic fluid of a human patient gave a positive reaction. The cerebro-spinal fluid did not.

The following tables summarize most of the findings of the above workers, and include our own subsequent work.

TABLE I.—*Andrewes's Reaction in Plasma or Serum.*

Author.	Reaction Positive.	Reaction Negative.
Andrewes, 1924 ...	8 uraemics	5 nephritics. 22 miscellaneous diseases. 2 rabbits with nephritis. Normal human serums.
Hewitt, 1925 ...	12 uraemics	Many miscellaneous diseases in children. 2 uraemic infants with hyperbilirubinaemia.
Rabinowitch, 1925	8 uraemics	Many miscellaneous diseases. 4 cases of typhoid. 12 cases of arteric-sclerosis or nephritis.
Blotner and Fitz, 1927	36 cases with marked renal insufficiency 2 nephrectomized rabbits 1 nephrectomized dog	Several hundreds of cases with miscellaneous diseases. 100 cardio-renal cases.
Harrison	13 uraemics	17 kidney diseases. 25 miscellaneous diseases. 4 normal.
Hewitt	22 uraemics	18 kidney diseases. Many miscellaneous diseases in adults.
	Total: 99 human cases.	

We may conclude from Table I that in all probability the reaction is confined to uraemia, or at any rate to severe renal inefficiency. A negative reaction, however, does not absolutely exclude the diagnosis of uraemia.

TABLE II.—*Relation of Andrewes's Reaction to Urea Retention.*

Author.	Positive Diazo.			Negative Diazo.		
	Cases.	Blood Urea, mg. per 100 c.cm.		Cases.	Blood Urea, mg. per 100 c.cm.	
		Max.	Min.		Max.	Min.
Andrewes, 1924 ..	8	650	220	5 3 rabbits	275 300	40 100
Hewitt, 1925 ...	12	692	240	—	—	—
Rabinowitch, 1925	8	450	152	12	225	32
Blotner and Fitz, 1927	7 8 10 7 4	107 171 223 321 536	60 108 172 224 322			
	36	536	60			
	2 rabbits	725	311			
Harrison	13	633	154	34	370	22
Hewitt	22	725	114	18	300	50

The results in Table II confirm Andrewes's conclusion that nitrogenous retention always accompanies retention of the substance responsible for his reaction, but that urea retention and his reaction do not run strictly in parallel. We have noted that the reaction is not confined to any one of the different clinical types of uraemia. In general the reaction becomes more marked as the uraemia becomes more severe clinically. The following findings in one case are given in illustration (Table III).

* A report to the Medical Research Council.
† Working under the auspices of the Freedom Research Fund.

TABLE III.

Date.	Clinical Notes.	Andrewes's Reaction.	Blood Urea, mg. per 100 c.cm.
July 24th, 1926 ...	In coma	Negative	144
August 16th, 1926 ...	—	Negative	117
October 26th, 1926 ...	First convulsion on October 29th	+	128
December 7th, 1926...	Second convulsion on December 2nd	++	242

TABLE IV.—*Findings in Cerebro-spinal Fluid when Andrewes's Reaction is Positive in Blood.*

Author.	Andrewes's Reaction Positive. No. of Cases.	Andrewes's Reaction Negative. No. of Cases.
Andrewes, 1924	1*	2
Hewitt, 1925	0	1
Blotner and Fitz, 1927	0	1
Harrison	0	2
Hewitt	0	3
In Ascitic Fluid:		
Blotner and Fitz, 1927	1	0

* Slightly contaminated with blood.

It appears probable that the substance responsible for Andrewes's reaction does not pass into the cerebro-spinal fluid. It seems to have gone into the ascitic fluid in the one case in which the point has been tested.[3] In this connexion we would add that we have been unable to obtain a positive reaction with an alcoholic extract of the corpuscles separated from serums which give strongly positive Andrewes's reactions. The substance responsible for the reaction, therefore, probably does not diffuse into the red corpuscles, or only to a slight degree.

In a paper one of us (L. F. H.) published in 1925[4] it was noted that in two cases of uraemia in infants with negative Andrewes's reactions there was hyperbilirubinaemia instead of the usual hypobilirubinaemia. We have since encountered a third case. The patient, an adult, was clinically uraemic, and the blood urea was 320 mg. per 100 c.cm. There was in addition severe jaundice with marked hyperbilirubinaemia and bile in the urine. Andrewes's reaction was, however, negative. We thought at first that there might be some connexion between the hyperbilirubinaemia and the negative Andrewes's reactions, but subsequently four cases have been encountered in which hyperbilirubinaemia was associated with positive reactions.

In conclusion, Andrewes's reaction is so little known that a brief outline of the simplified method may be of value.

Simplified Method.

Reagents (identical with those used in van den Bergh's test).

Solution A:
- Sulphanilic acid ... ... 1 gram
- Concentrated hydrochloric acid ... ... 15 c.cm.
- Distilled water ... ... to 1,000 c.cm.

Solution B:
- Sodium nitrite ... ... 0.5 gram
- Distilled water ... ... to 100 c.cm.

The diazo reagent is prepared by mixing 25 c.cm. of Solution A with 0.75 c.cm. of Solution B. The mixture may be kept for at least a week at room temperature without loss of sensitivity so far as Andrewes's reaction is concerned, although, of course, the Solutions A and B must be mixed freshly for use in van den Bergh's test. The mixture often turns slightly yellow after keeping for a day or two, but this does not matter in Andrewes's test.

Serum or oxalated plasma is obtained from the patient in the usual way. *Post-mortem* blood from a case of uraemia will often give the reaction, though our impression is that the serum obtained after death does not give so strong a reaction as the serum obtained from the same patient shortly before death.

To one volume of serum two volumes of alcohol (absolute or 96 per cent.) are added. The precipitated proteins are separated by centrifuging or filtering. (A slightly improved extraction may be obtained by heating the mixture of serum and alcohol to the boiling point.) To four volumes of the filtrate one volume of the diazo reagent is added. The mixture is boiled thoroughly for half to one minute, and a solution of 40 per cent. soda is added drop by drop, shaking after each addition. The soda may be added immediately after the boiling.

The colour change on making alkaline with soda is the essential part of the reaction. The test should be called positive only when a definite pink or cherry-red colour is seen. This pink colour is fleeting. It may last for a few seconds only, and the mixture must therefore be observed carefully whilst adding the soda. In a few very severe cases of uraemia the pink colour may persist for longer periods, even up to half an hour. The test in its present form is only qualitative. We have found that the volumes recommended may be judged sufficiently well by eye without greatly lessening the sensitivity of the reaction.

On boiling the mixture of protein-free filtrate and diazo reagent, a yellow-brown colour always results in positive cases, but a similar colour may also be obtained in negative cases. We have found that substances other than that responsible for Andrewes's reaction may give a yellow-brown colour at this stage (in acid solution), but that these other substances do not yield a red colour on alkalinization.

One of us (G. A. H.) has established a clue as to the nature of the substance responsible for Andrewes's reaction, but the work is not so advanced as to allow of a definite statement here. It may be mentioned, however, that the substance is certainly present in normal urine.

Summary.

1. A positive Andrewes's diazo test is only found in uraemia or severe renal inefficiency. A negative reaction, however, does not exclude uraemia.

2. The unknown substance responsible for the reaction does not appear to pass into the cerebro-spinal fluid, and is either absent from, or present only in minute quantities in, the red blood corpuscles. The blood of uraemics obtained *post mortem* often gives the reaction.

3. Nitrogenous retention always accompanies retention of the substance responsible for the reaction, but urea retention and Andrewes's test do not run strictly in parallel.

4. An outline of the simplified method is given. It is claimed that the reaction thereby becomes a simple clinical test.

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Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A CASE OF THALLIUM POISONING.

THE following case is worth recording as one of the few in which serious toxic symptoms have followed the therapeutic use of thallium.

F. and M., sisters, aged respectively 11 and 8, brunettes of excellent physique, were given thallium acetate, one 8.5 and the other 8.75 mg. per kilo. On the fourteenth day the hair of F. had begun to loosen, and both children were stated to have complained of some slight pains in the knees since the twelfth day. On the sixteenth day F. was seen by one of us in the casualty department. The lower extremities were swollen, hot, and tender from the lower third of the thigh downwards. The skin of the legs was red and shiny with irregular livid blotches. There was fluid in the knee-joints, which were exceedingly tender and painful. Sodium salicylate and methyl salicylate ointment were prescribed, and the child was sent home. On the eighteenth day the child had a fit and, according to the parent, remained only partly conscious for two hours. The fit began with clonic movements in the right arm and leg, which later involved both sides. The face was pale and the pupils dilated; there was foaming at the mouth, which was partly open; the tongue was not bitten. Faeces were passed involuntarily. The child was given some bromide, but was restless during the night and micturated every half-hour for several hours. The patient has no recollection of the fit. There is no personal or family history of epilepsy.

On the nineteenth morning she was admitted, quite conscious, but slow in her replies to questions and unable to lie still. Choreiform movements were present, the face was flushed, and there was a faint rash on the trunk marking the meshes of the vascular network. The temperature was 101°, and the blood pressure 120 mm. Hg. The hair was loose, but depilation incomplete. The urine, which was acid, did not contain albumin, sugar, or abnormal pigment, but acetone bodies were present.

The second sound of the heart was accentuated at the apex; otherwise there was nothing abnormal in the chest. In the abdomen there was vague tenderness in both lumbar regions. The tendon-jerks were all obtained except the knee-jerks, the knees being too tender. The pupils, which were dilated, reacted

to light and accommodation. The condition of the lower extremities was similar to that already described, but very much improved.

On the twenty-third day the patient complained of pain on respiration. Nothing abnormal was found in the chest. There was a visible swelling of the abdomen and flank which gave the physical signs of fluid; as it extended from the umbilicus deep into the loin its colonic nature was dissimulated and only became evident after a copious motion. Acetone was still present in the urine in spite of large quantities of barley sugar and glucose lemonade.

The patient's subsequent progress was uneventful, and she was discharged ten days later somewhat emaciated, but able to walk. The systolic blood pressure was 105 mm. Hg. The knees and legs were still tender on the thirty-fifth day, and she had, according to the parents, attacks of drowsiness accompanied by flushing and puffiness of the face lasting about ten minutes.

The sister, M., has had no ill effects at all. Her hair had been clipped rather too short before we saw her, and to assist depilation we adopted the following plan. On the eighth day the scalp was treated with Unna's zinc gelatin and covered with a capeline bandage. This was peeled off on the twenty-first day with very little discomfort, yielding a perfect "billiard ball." The hair in both cases has begun to grow.

Most of the symptoms described are explicable as the action of a poison on the nervous system, but the arthritis and periarthritis of the knee-joints, with which we are familiar as occurring nearly invariably to a lesser degree, seem to demand a different explanation. The constant presence of the condition seems to argue against the theory that thallium has a biotrophic influence towards some micro-organism capable of producing an arthritis.

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FOREIGN BODY IN THE BLADDER.

I WAS recently called to a patient, aged 29, two months pregnant who had symptoms of cystitis and pelvic inflammation which had been going on many months. On passing a metal catheter I felt a hard foreign body in the bladder, and on questioning the patient she said she could not remember ever having inserted anything, so I concluded it was a case of calculus, especially as it had a distinctly stony feel. Mr. Frank Belben operated a week later and removed a piece of wood three and a half inches long by one inch wide, partly covered with calcareous deposit, evidently a peg-label for garden plants.

About a month later, when the patient had quite recovered, I inquired when she had put the wood there, and she said she had used it to insert some pledgets of lint soaked in lead lotion which I had ordered two days before the operation on account of the inflamed state of the vagina, and did not know the wood had remained inside. The calcareous deposit, of course, proved it to have been there much longer. The urethra appeared to be quite normal in size, but she assured me that the insertion caused no pain or difficulty. If I had not been called in till the time of confinement the case might have ended as one of puerperal septicaemia of unknown origin, as I should not have suspected the presence of the foreign body then.

H. HUNTER WOODS, M.R.C.S., D.P.H.
New Milton, Hants.

CONGENITAL UNUNITED FRACTURE WITH FALSE JOINT.

THE rarity of congenital ununited fracture gives the following case some interest.

A child, aged 3 years, was seen by me at a welfare clinic. The history was that the child was apparently normal when born, but a day or two after birth it was noticed that the right leg was deformed. On examination at the clinic both bones of the right lower leg were found ununited; a false joint was present at the junction of the lower and middle thirds of the leg. On the anterior aspect of the joint was a bursa, and the whole appearance resembled nothing so much as a second knee. A fair amount of movement was present, and the child could get about fairly well, using the normal or abnormal "knee" at will.

It is curious to note that the child had seen but two doctors, one shortly after birth, and myself almost three years later.

EUSTACE THORP,
Assistant M.O.H., Sunderland.

TREATMENT OF SPIRILLUM FEVER WITH STOVARSOL.*

THE wide prevalence in Africa of "spirillum" or "tick" fever indicates the need of obtaining some simple and safe treatment which could be entrusted to the ordinary intelligent native, when he is at a distance from skilled medical help. The salvarsan series provides a more or less certain cure, but these drugs cannot be put into the hands of the untrained native. Their use is not without danger, and the necessary outfit and technique prohibit their employment outside regular medical establishments. It occurred to me that stovarsol, successful and safe in its treatment of other spirochaetal diseases, would be worthy of trial as an alternative to the arsenobenzols; accordingly a test was undertaken in the Church Missionary Society's hospital at Toro, in Uganda. The success met with so impressed me that I feel justified in publishing the result.

When first using stovarsol I continued its administration longer than was necessary; I have now decreased the length of the courses of treatment without any failure resulting. The clinical details were as follows.

Seven patients were treated with stovarsol, five being Europeans and two natives. One of the Europeans had previously had two intravenous injections of novarsenobillon, but the others had had no treatment. In each case the spirochaetes of spirillum fever were found in the blood. The first two patients—one a European—were given the 4-grain tablets in water, in the early morning, four tablets being administered on the first day, five on the second day, six on the third and fourth days, five on the fifth day, and six on the tenth day; no relapse followed. The next two patients were given a four-day course, the first dose being administered immediately on the first signs of fever, and not, therefore, necessarily on an empty stomach. The first dose was four tablets, followed on the next day by five tablets, and on each of the two successive days by six tablets in water; no relapse followed. The other three patients received only two days' treatment, six tablets being given each day, swallowed whole, followed by water. No toxic symptoms were seen and no relapse occurred.

Though this is too small a series for a dogmatic statement to be made I have no hesitation in advising others to test this drug. In treating patients with yaws and syphilis I have used as large a dose as nine tablets in one day without ill effects. I consider, therefore, the administration to adults of six tablets, each of 4 grains, to be perfectly safe. I gave three supplies of stovarsol to an intelligent native pastor, who reported that three patients had been cured without relapse. I feel very hopeful that a real solution has been found of the difficulty of dealing with spirillum fever in districts far from medical help. Its diagnosis by the layman will depend on the characteristic tick fever headache, compared with which the headache of concussion has been described as trivial. The pains in the long bones are also marked, but the terrible intensity of the headache, which has led to suicide in some cases, should be the symptom upon which the layman is advised to act. The medical practitioner will be able to examine blood films for spirochaetes.

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Reports of Societies.

INSOMNIA.

AT the meeting of the Medical Society of London on December 12th, with Mr. H. W. CARSON in the chair, Dr. E. M. CALLENDER opened a discussion on insomnia.

Dr. Callender said that the most striking fact in normal sleep was the partial or complete loss of consciousness due to lessened activity of the brain tissue, and particularly of the cortex cerebri. The first of the special senses to go was vision, the last was hearing, and during sleep the auditory sense was the most easily excited. Respiration became deeper and slower, the blood pressure fell, the pulse frequency was lessened, and knee-jerks were lost. Normal sleep varied in intensity during the night. For the first two hours there was a rapid increase in intensity; from the third hour onwards the depth of sleep became gradually less, but there had been observed to be a second period of intensity about the sixth hour. The periodical

* Owing to limitation of space it has been necessary to abridge Dr. Schofield's original paper.

recurrence of sleep appeared to be due to fatigue of the vasomotor centre in the medulla, brought about by its continuous activity during waking hours. Insomnia might arise from any cause which disturbed this equilibrium; it made its appearance in states of excitement, worry, emotion of any kind, pain, fever, cardiac or respiratory disease, and extremes of arterial pressure. Sometimes it arose from external causes, such as the noise of traffic or the unaccustomed tactile sensations produced by lying in a strange bed. The treatment of insomnia was the remedying of the underlying cause of ill health. When there was insomnia without illness he sometimes advised patients to try going to bed an hour or two later, or to alter the hour at which the last meal was taken. In the case of aged and debilitated patients the administration of hot milk or some patent food in the middle of the night might cause a resumption of sleep. It was important to attend to the type of bed and bedding, the weight of the clothes, and the temperature of the room. Many kinds of pain causing insomnia were relieved by a dose or two of aspirin. The misery of a dental abscess might be relieved by the application to the face of a pepper plaster—flannel soaked in brandy, peppered freely on one side, and tied to the face with the pepper next the skin. Insomnia in patients with hyperpiesis might be relieved by a good dose of calomel, which acted as a hypnotic long before it acted as an aperient. Hypnotics should be avoided if possible, but sleeplessness might cause such havoc that they must be given; it was a good principle never to use them until satisfied that it was really necessary to do so.

Dr. GORDON HOLMES, speaking from the neurological standpoint, said that, although insomnia was found in many forms of organic nervous disease, it was usually due to the attendant pain or discomfort; it occurred as a primary symptom, however, in some conditions, of which encephalitis lethargica was an example. It was in psychogenic nervous disorders that the neurologist most frequently met with insomnia. Lack of sleep was one of the most common symptoms of neurasthenia of any origin. Occasionally insomnia was met with where no organic or psychogenic factor could be found. In some of these cases inability to sleep appeared to be constitutional or hereditary; in others insomnia had become a habit, the patient repairing to bed convinced that he could not sleep, and therefore in no proper frame of mind to ensure slumber. In neurasthenia a change of environment was often required. Most normal people slept more soundly after exercise, if not too fatiguing, and this held also for some of the neuroses. Of physical treatments massage was the most important. He usually ordered general massage in the late evening, at least 90 minutes after the last meal. Hot baths often provoked sleep, but occasionally made patients more restless and wakeful. Drugs should not be employed if it was possible to do without them. The danger of hypnotics, if these were prescribed with reasonable care and supervision, had been exaggerated, though the risk of abuse in dosage and prolonged administration was probably greater in the case of neurasthenic patients. Alcohol was perhaps safer than, and as effective as, any of the hypnotics. A glass of beer before retiring often secured a good night's sleep, but it acted only with those not accustomed to alcohol; the stronger spirits should be avoided. He thought that medinal was one of the safest and most efficacious of hypnotics.

Sir MAURICE CRAIG said that in his earlier years he thought drugs a pernicious method of treatment for sleeplessness, only to be resorted to in dire necessity, but he had come to revise that opinion. Sleeplessness in the young was probably more damaging than in those of later age. The general practitioner often did wrong in allowing children to go with very little sleep, with the result that they had digestive and other difficulties, whereas a small dose of bromide would correct these. He thought it was a mistake to use the term "sleeping draught." Most of the sedatives were not "sleeping draughts" in the true sense of the word; they would not produce sleep if given by day. These preparations acted only as a sedative to the nervous system, and the sleep that followed them was natural sleep. If medinal were given only by day the patient would probably have a quiet day and sleep at night. Bromides were very valuable in small doses, but large doses were dangerous; they furred the tongue, upset the digestion, were toxic to the skin, and confused the mind. Another drug which was regarded as safe was paraldehyde, but it had great disadvantages. If a patient had been without sleep and was just becoming confused it was a most valuable drug for ensuring slumber, but the danger was that it was excreted through the respiratory tracts, and in some persons it caused the air tubes to be filled with mucus. He had used the barbituric acid group freely for many years, and had never seen any bad effects other than minor difficulties, such as rashes, which might arise from personal idiosyncrasy. Sulphonal was valuable with old persons; it was perhaps one of the best, but was toxic in its effects. When a sedative had been obtained which suited the person it should not be changed just because the person was beginning to sleep. The few persons who became addicts were of the type who would respond thus to any drug, but he had seen very few cases of addiction, even including those following treatment with preparations of opium.

Sir WILLIAM WILLCOX thought that treatment of insomnia should not begin by resort to drugs, but that general measures should be tried. In insomnia associated with delirium better results followed the application of a hot-pack than a resort to drugs. With neurasthenic patients it was necessary to give hypnotic drugs in some cases, but caution should be employed. He believed that he had seen more cases of unfortunate results following the use of hypnotic drugs than most medical practitioners, and had concluded that it was not only the unstable who became addicts. He thought that if the members of a first-class football team were given a dose of heroin every night for a month half of them would become addicts. A drug which was much less toxic than others was adalin; bromural also was helpful.

Dr. F. M. R. WALSHE urged the need of a new orientation with regard to insomnia; he asked if insomnia was anything more than the absence of sleep, if there was more than one kind of insomnia, and if the insomnias of an exciting neurosis, of a nocturnal delirium, and of high blood pressure were identical. Dr. H. A. ELLIS reported observations of the specific gravity of the urine early in the morning, and said that it was evident that in neurasthenia some faulty elimination during sleep accounted for subsequent wakefulness, one cause of which was the inability of the stomach to empty itself; anything which would release the tightness of the sphincter of the stomach would do away with the common wakefulness in the middle of the night. Dr. C. P. SYMONDS shared Dr. Walshe's belief that the whole problem of sleep should be approached from a new physiological point of view in the light of the work of Pavlov. In many persons with the major complaints of insomnia and depression the latter was considered to be the result of the insomnia, whereas they were really cases of mild depressant psychosis in which the insomnia and the depression were both symptoms of the same underlying condition. Dr. GORDON LANE thought that absolute sleep was much less often attained than was supposed, if indeed it was ever attained at all. It seemed to him that in any condition in which the insomnia was the result of toxaemia from the accumulation of waste products little good was likely to be done by sedatives.

THE ACTION OF SYNTHALIN.

AT the meeting of the Section of Therapeutics and Pharmacology of the Royal Society of Medicine on December 13th, with Professor J. A. GUNN, President, in the chair, a discussion took place on the action of synthalin, a synthetic preparation recommended for the treatment of diabetes, to be given by the mouth.

Physiological Experiment.

Dr. H. H. DALE, in opening the discussion, confined himself to a consideration of the action of synthalin as appreciated by laboratory experiments; others who followed

in the discussion would be able, as he was not, to deal with the question of its action on the diabetic patient. Synthalin was a guanidine compound, the discovery of which started from the observation that poisoning by guanidine itself was accompanied by a hypoglycaemia. This fact suggested to Frank of Breslau that it might be worth while to search among guanidine derivatives for a substitute for insulin. The relation became more favourable as the carbon chain was lengthened by building up synthetic compounds, and ultimately, with ten carbon atoms, a compound was found to be sufficiently promising to warrant an extended clinical trial. The name of the compound was decamethylenediguanidine, the formula of which Dr. Dale displayed on the blackboard. According to Frank, synthalin lowered the blood sugar of a dog which had been made diabetic by removal of the pancreas, reducing it to or below normal level. It was also stated that in a diabetic dog the abnormal relation between the arterial blood sugar and the venous blood sugar in a limb was changed to the normal by injecting a large dose of synthalin—that is to say, the normal slight excess of glucose in the arterial over the venous blood was restored if a large dose of synthalin was given to the diabetic animal. In these cardinal features, therefore, the action of synthalin, at least superficially, seemed to resemble that of insulin; but it differed in certain important respects. The action of insulin, when given intravenously, began almost immediately, whereas the action of synthalin usually began to be manifest only after a delay of some hours. On the other hand, synthalin had the practical advantage that its action could be produced on oral administration, and so far as the speaker was aware this was the only method of the kind tried to any extent in practical medicine. A substance promising such convenience in administration as compared with the tiresome injections of insulin administration was certain to be given a ready trial.

It might be taken as a general rule, continued Dr. Dale, that a new remedy which was going to establish itself as a permanent addition to therapeutic methods would find a substantial unanimity of approval quite early in its career. Its advantages early became so obvious that the ingenuity of many workers was attracted to the elimination of the drawbacks, whatever those might be. In recent medical history salvarsan and insulin might be taken as examples. There was another class of newly introduced remedies with regard to which a different course was taken. Here the enthusiasm engendered by a number of early optimistic reports soon showed a tendency to diminish as the opportunity of trial spread to a wider constituency. Experience served to discover new limitations and drawbacks, and in course of time remedies of this kind were apt to be superseded and to retain only an historical interest as stages on the way to something better, or, if they did find a more permanent use, it was a use in a much more restricted field than that which the first descriptions had appeared to open up. He was inclined to think—though he might not be interpreting the signs correctly—that synthalin would be found to belong to this second class. From his own point of view as an experimental physiologist the real interest of synthalin had been in a different direction. A substance having an action so similar to that of insulin in some features could not fail to have an interest as possibly giving a clue to some part of the quite unknown structure of insulin itself. From this point of view the matter of chief importance was to discover whether the hypoglycaemia which synthalin could produce was the result of an action fundamentally similar to that of insulin, or whether the resemblance was merely superficial, and the hypoglycaemia produced by an action of a different kind. Accordingly workers in his laboratory had carried out a number of experiments on the details of the action of synthalin in comparison with that of insulin. They repeated, in the first instance, the observations on its effect when administered to normal rabbits. For this purpose very large doses in comparison with those used in therapeutics had to be given in order to produce any definite effect at all, and even then the result was somewhat uncertain. The usual effect, during the first hour or two, was a rise of the blood sugar percentage above the normal. That did not always happen; sometimes there was practically no effect on the blood sugar for an hour or so, and in an occasional rabbit the fall might begin quite early without any preliminary rise, and even without much latent period. But the usual course was a preliminary period in which the blood sugar rose to a varying degree above the normal, followed by a fairly rapid fall at the end of from four to six hours. If the animal was killed when hypoglycaemia had once definitely appeared, the liver on analysis would be found to have lost practically all its glycogen. A second point was that when this hypoglycaemia had been produced no measures to relieve it—not even the production of a lasting restoration of the blood sugar to normal—would save the animal's life. The dose necessary to produce hypoglycaemia in the rabbit, therefore, was a generally toxic dose. A third point to be noted was that, even before a definite hypoglycaemia had set in, adrenaline in doses which would normally produce a large rise in blood sugar failed to have any such effect.

The impression produced on his mind by these observations was that, while synthalin in sufficiently high doses would produce a great though delayed fall of blood sugar, these doses had to be large enough to produce a serious impairment of function of the liver. The one feature which could be regarded as having perhaps a fundamental resemblance to insulin—and not merely a superficial one—was the depression of new carbohydrate formation, which was suggested as one of the two main effects of insulin itself. But in insulin such an effect, if it was a true effect, was temporary and physiological; in synthalin there was so far no evidence that it was other than a permanent and toxic effect on the liver function. The fact was recorded clinically that synthalin might be unsuitable and even dangerous to patients whose livers were already unhealthy. Perhaps also the fact might be taken as pointing in the same direction that the means most widely advocated for counteracting the anorexia and nausea obtained with synthalin were the simultaneous administration of a bile acid; it was difficult to see why this bile salt should have a value in avoiding any anorexia and nausea produced by synthalin unless this was the result of a secondary action on the liver, and not a primary effect on the stomach itself. On a closer analysis, endeavouring to trace the glucose which disappeared with the administration of synthalin, the similarity between synthalin and insulin appeared no longer to hold. So far from the change in muscle-glycogen accounting for the glucose lost, it merely provided an additional loss, also needing explanation. Under no conditions had any change other than a loss been found in the muscle-glycogen as a result of synthalin. Although extra glucose was disappearing the muscles simultaneously lost—not gained—glycogen. It was quite clear that the glucose was not, in that form of experiment, disappearing in the same way as it did under the action of insulin. The next obvious possibility was that the glucose was being simply cloven into lactic acid; that possibility was at the moment under experiment in his laboratory. He could only say, so far as information was available, that during that period of increased glucose disappearance, with diminished oxygen consumption, the fact that the respiratory quotient rose far above unity was certainly in favour of a change of glucose merely into lactic acid or something of that kind, but further experiments were needed to establish this. If lactic acid were indeed the substance produced from the disappearing glucose it might in turn be built up into glycogen under the more favourable conditions of the intact living body, and when the dose of synthalin was not of such toxic dimensions as were found necessary in the laboratory in order to get the clear demonstration of this action.

In conclusion Dr. Dale made a brief reference to another antidiabetic preparation called "glukhorment," which was put forward with the high authority of Professor von Noorden; Dr. Dale, however, said that he had nothing to add to what he and Dr. H. W. Dudley had written on this subject in the BRITISH MEDICAL JOURNAL (December 3rd, page 1027).

Clinical Observations.

Dr. GEORGE GRAHAM said that reports of the clinical value of synthalin had varied greatly. The earlier workers in Germany had quite good results. In America Joslin had reported on a few cases and thought the substance worthy of further trial. From Montreal came similar reports. In this country Dr. R. D. Lawrence had had disappointing results, while the results obtained by Professor Maclean and others had been rather more favourable. Dr. Graham's own cases were twelve in number. These had been under the observation of his colleague Dr. Linder and himself at St. Bartholomew's. He showed graphs relating to each patient. The first two cases in which synthalin was tried convinced him and his colleague that there was a definite action on the sugar in the blood and also in the urine, though the normal blood sugar was not recovered. In the next four cases, as the result of experience, treatment was placed on a more scientific basis, but the attendant nausea and anorexia were found to be considerable. The toxic effects in many of the other cases were a very serious inconvenience. One child, aged 6, was rendered very ill, probably because too large a dose of synthalin was given. Of the 12 cases, in 4 synthalin had very little effect indeed; in the remaining 8 there was quite a definite result, but in only 2 of these had synthalin treatment been continued; 4 had been given up on account of toxic symptoms, and 2 for other reasons. Synthalin undoubtedly had an action on the glycosuria, but it worked very unevenly, differing in this respect from insulin, which practically always produced good results. It caused toxic effects, and there were no means of predicting which patient was going to suffer these and which was not. It was difficult to say whether synthalin had any place in the treatment of diabetes. For the patients who needed insulin and were willing to have it, synthalin had no value at all at present, in his opinion; for those who were unwilling to have more than one dose of insulin and should have more doses, synthalin might be of some help, and for those who would do anything to avoid insulin, although they needed it, synthalin was worthy of trial. But the patient must be watched and the treatment stopped as soon as any untoward circumstance occurred.

Dr. R. D. LAWRENCE said that his first experience of synthalin, from January to April of this year, was discouraging. In two mild cases of diabetes synthalin had its usual effect in reducing glycosuria. He saw no effect on the ketosis in these cases, and no increase in weight, strength, or energy. In four severe or moderately severe cases he tried to substitute synthalin, both entirely and partially, for the accustomed dose of insulin, but he failed to produce any definite effect in sparing the amount of insulin. In one of them he thought he had spared 15 units of insulin, but when he stopped the synthalin again he found the case was adequately controlled by the same amount of insulin as was then being given, and that apparently the patient had improved in her carbohydrate tolerance. The chief difference between his own series and that of Dr. Graham was that many of Dr. Graham's cases, he thought, were on treatment for the first time. (Dr. GRAHAM: About half of them.) Cases which had not been previously treated, either by diet or insulin, for a long time were of very doubtful value from the experimental point of view. For the first two or three months—at any rate for the first month—one could always expect that the insulin, at first required in large amounts, might be considerably reduced afterwards. These cases of his own had been for a long period on a stable diet, and had had very minor changes in their insulin. He had shown his results to Professor Frank when he was over in this country. Frank had no criticisms to offer as to the way in which he had used the synthalin, but said that he could not understand the results, and that he had seen a considerable number of other cases in which it had been impossible to produce any effect with synthalin. He could only advise him to go on trying. Frank divulged the fact also that one could not go on with synthalin indefinitely, and that even patients who tolerated it well for the first two or three weeks usually developed an intolerance after six, eight, or ten weeks, when synthalin had to be stopped. Of course, in such cases it was necessary then to readjust the diet or the insulin. The speaker therefore decided from his practical point of view that this drug which had to be interrupted and always to be under control was not of any great value in treatment. The next experience he had with synthalin was rather an unwitting one. Dr. Dale had asked him to test the effect of "glukhorment" on diabetic patients, and he followed out two cases very carefully, changing them over to synthalin after they had been for a time on the other preparation. The results showed how similar—indeed, identical—were the effects with "glukhorment" and with synthalin, both in the reduction of glycosuria and in the production of the same toxic symptoms, anorexia and nausea, sometimes actual vomiting. One of these last two cases was the only one in which he had produced any satisfactory results with synthalin; here he got it to spare about 15 units of insulin a day. In his opinion synthalin possessed more disadvantages than advantages in the treatment of diabetes. The disadvantages were its frequently toxic action when given in efficacious doses (probably it was always at least mildly toxic), the uncertainty of its action, the fact that it could not spare much insulin in severe cases, and the fact that it could not be taken continuously, but must be intermitted, involving a readjustment of the diet and insulin. It was a brake upon metabolism, but (he thought) a toxic brake, and there seemed to be no evidence that it built up the body or had the anabolic action which insulin possessed. In a word, he did not think that synthalin had brought anything of importance into the routine treatment of diabetes, which still depended on diet, and on insulin if necessary, and to introduce a doubtful factor could only complicate matters and do harm.

Dr. P. J. CAMMIDGE said that he had done some experimental work, though not on the same scale as that carried out under Dr. Dale. His results, however, had been very similar. In his experimental work the doses of synthalin given had corresponded as far as possible to the physiological or medicinal dose, and the huge doses of which Dr. Dale had spoken were not employed. The main thing that came out from these experiments was that in most of the animals there was an effect on the blood sugar, generally coming on about two hours after the animal had taken 2 mg. per kilo of body weight, but the maximum effect of synthalin was not seen until after about twenty or twenty-two hours. In quite a number of rabbits the blood had been examined every hour for forty hours, and the maximum effect was found to appear at the twentieth or twenty-second hour after the normal dose. The drop extended from about the second hour to about the twenty-second, but the rise, up to the thirtieth hour, was much more rapid, when as a rule the blood was back again at its fasting normal level. His clinical experience of synthalin was limited; the cases he happened to get hold of were perhaps not suitable. From the recorded cases it appeared that success was most pronounced in elderly patients, and his experience was that the diabetes of the elderly patient—over 45 or 50—was really not the same thing as the diabetes of the younger, and that was the reason probably why synthalin acted better with the former. It was likely that the diabetes of the elderly was essentially a liver condition, and that synthalin had some slowing effect upon the metabolism there, and so proved to be more beneficial than in the young patient, who probably was essentially and primarily suffering from a pancreatic defect.

Dr. DALE, in reply, said that the plan he and his colleagues had adopted, ordinarily indefensible, had been to examine the effects of abnormal toxic doses of a kind which would never be used in therapeutic practice, because it was desired in the first instance to obtain some recognizable effect. With therapeutic doses it had not been possible to observe anything which could be regarded as significant. He understood from Dr. Cammidge that with the animal still fasting the blood sugar returned to normal. (Dr. CAMMIDGE: Yes.) Dr. Dale said that that was a point he had not been sure about. He added, on the general discussion, that it was very gratifying to find clinical results coming up to the expectations derived from physiological experiment.

TRAUMATIC NEURASTHENIA AND THE "LITIGATION NEUROSIS."

A COMBINED meeting of the Section of Neurology of the Royal Society of Medicine and the Medico-Legal Society was held on December 8th, when Sir FARQUHAR BUZZARD opened a discussion on traumatic neurasthenia and the "litigation neurosis." It included an interesting digression by the Rt. Hon. H. P. MACMILLAN, K.C., chairman of the recent Royal Commission on Lunacy and Mental Disorder, on the subject of the expert witness. Professor EDWIN BRAMWELL and, later, Dr. GORDON HOLMES presided.

Sir FARQUHAR BUZZARD said that "traumatic neurasthenia" was a term applied to a clinical condition familiar to both the medical and legal professions. It had led to much confusion, and until its etiology and pathology were clearly recognized and generally accepted the confusion was likely to continue. He submitted that traumatic neurasthenia had a psycho-pathological basis. Generally it developed slowly after an injury, the site of which was of no consequence; it rarely supervened on an injury which had caused grave physical disability, or on an injury the responsibility for which could not be placed on the shoulders of some person or persons other than the patient, and it was very rare apart from motor and railway accidents, workmen's compensation cases, and minor war injuries. He had seen three cases of this kind associated with a railway accident in which it was admitted that all the patients escaped without a scratch. It did not develop after such accidents as those of the hunting field, for which only the rider or his horse could possibly be responsible; the difficulty in such cases was to make the patient take his concussion or other injury seriously enough. The psycho-pathological features included fear (at the time of the injury), anxiety as to possible consequences to health, with a subconscious desire to safeguard the future in that respect, a sense of injury, ignorant interpretation of symptoms which arose as the neurosis developed, injudicious remarks and advice of doctors, relatives, and friends, and the worry of litigation. When the nature of the accident was such as to evoke an emotional disturbance in the form of fear, this condition was, unfortunately, not referred to under its proper name, but as "shock." Recently the speaker had seen a woman who had been in a railway accident. She carried with her an illustrated paper with photographs of the wrecked train, in order that, although she had escaped unhurt, he and others might not underestimate the horrors of her adventure. For the first week she was exhilarated, and then followed an emotional reaction to which had been attached the unfortunate designation of "delayed shock." From that moment the question of compensation arose in her mind, with the result that the familiar picture of traumatic—or, in this case, non-traumatic—neurasthenia was established. In workmen's compensation cases the contributory factors were often trivial separately, but their cumulative effect was overpowering, and the condition of anxiety neurosis was soon well established. To the lay mind trauma was still the most important and universal etiological factor in medicine. A pain here or there was sufficient to keep a person alert for complications or sequels; fear and anxiety robbed him of sleep, and so the vicious circle was formed. Was this condition to be regarded legally as the result of the accident? That some doubt was felt in juridical minds was evident from a letter which he quoted from a firm of lawyers in a compensation case:

> "The employers' case is that the man's inability to work is caused by brooding over the effects of the accident, and that he is suffering from weakness of will and a fixed but erroneous idea that he is a chronic invalid. If they establish this proposition the court could refuse further compensation. If, on the other hand, this man is suffering from neurasthenia as we are advised, he is entitled to a continuance of the compensation."

The problem was an important one from both the economic and ethical points of view. Its solution did not rest entirely with lawyers. If medical practitioners were as much alive to the psychological as to the physical dangers of a patient who had been in a railway or other accident, if they took as much care to prevent infection of his mind with insidious morbid ideas as they did to prevent infection of his body with pathological organisms, many of these cases would be cleared up. The medical profession was to blame for using the term "traumatic neurasthenia" as denoting some disease which was the direct result of injury, and for talking about "shock" when what was really meant was "fright"; still more reprehensible was the practice of treating a patient with established neurasthenia by giving him a weekly bottle of medicine and the exhortation to take plenty of exercise in the open air. Improvements in the standards of medical treatment, both preventive and remedial, would certainly lessen the incidence of traumatic neurasthenia, though they would not abolish it. Even if it were practicable to alter the law for dealing with these difficult cases, the matter of diagnosis would still give rise to perplexity, and the time-honoured but painful conflict of medical testimony would only be shifted to another field.

The Right Hon. H. P. MACMILLAN, K.C., said that this kind of problem was a familiar one; the judge had to discriminate daily between things which were and those which were not the direct consequences of the original wrong, or tort, or accident. The doctrine of remoteness came in, and not everything that followed an injury was treated by the law as a consequence of the injury which entitled the victim to recover damages for that sequel. But in the case of a railway accident, for example, it was legitimate to estimate the damages with regard to the supervening psychological state. The patient might have suffered no direct physical injury, but a pathological state of mind had supervened which would not have supervened but for the occurrence. Was this state of mind a matter for compensation? The law was not an exact science like medicine; criteria which might not commend themselves scientifically had to be applied. A criterion employed in the courts was that no person could recover in respect of a breach of contract or a tort (an injury) unless he could show that the consequences upon which his complaint was founded were the natural and probable consequences of the occurrence. Such a criterion was easy to formulate, but often difficult to apply, as in the case of a person injured in a railway accident who happened to be of a highly nervous temperament. The railway company must take its passengers as it found them. If some susceptible person were injured, so that the consequences in his case were graver than they would be in a person more temperamentally robust, that was the railway company's responsibility. Nevertheless, the law recognized what was called a *novus actus interveniens*, and if it could be shown that the condition of the patient was due, not to the occurrence, but to the patient having done something subsequently which had introduced into the chain of causation a new element for which the railway company was not responsible, then the law would say that the consequences were not directly and naturally attributable to what the company had done. The mere fact, however, that the patient was of a highly nervous type, with a disposition to brood or to magnify grievances, would not necessarily introduce a few factor absolving the company.

Mr. Macmillan then discussed the function of medical practitioners in assisting the court to determine whether the symptoms exhibited by a plaintiff were the probable consequences of the occurrence, and said that they could make an invaluable contribution to the cause of justice. The expert witness, in spite of the gibes at him, was indispensable, and of all expert witnesses the medical practitioner was perhaps the most conspicuous in the service he was able to render to the administration of justice. Why was it that in certain types of actions the law had admitted a kind of evidence—evidence of the nature of opinion and inference—which it strictly ruled out in other actions? It was because the judge was not himself competent to draw the inferences. The expert witness was needed in order to illuminate with his scientific knowledge facts which would otherwise be meaningless. Courts of justice had enlisted expert assistance in three ways: by the use of an assessor, as in Admiralty cases; by appointing an expert referee; and by calling an expert witness, whose value depended entirely upon his attitude. The vice of the situation, not applicable to the

medical profession alone, was that there had grown up a wrong theory that the expert witness was in a sense an advocate; the scandal—if it was a scandal—which had arisen over the conflict of medical testimony arose from a misconception as to the part which the expert played in court. The speaker had sometimes witnessed the struggles of an expert witness of the advocate type in trying to maintain an untenable scientific position. The function of advocacy should be left to the legal profession. The doctor was not entitled to disavow the views he had expressed in the witness box, whereas the lawyer was not bound by what he had argued at the bar. The function of the witness was to assist the court by stating to the best of his ability the scientific position as he conceived it, without colour or favour.

In conclusion, Mr. Macmillan said that probably the medical and the legal points of view would never be wholly reconciled, though some progress was being made in law, and cognizance was being taken of finer shades of differentiation; but the medical view remained necessarily scientific and exact, while the legal view was neither. He was not sure that it would be right to relegate to a body of medical men, not subject to cross-examination, the function of determining whether or not the state of a plaintiff was attributable to the accident. The law had to take the standard of the jury in these matters. The conflict was between rough justice on the one hand and interminable refinements on the other. The law had learned from medicine to discriminate with more justice, but it would never overtake medicine in the precision with which certain questions could be determined; nevertheless, he thought such questions should be determined by a court of law, with the assistance of expert testimony.

Sir JAMES PURVES-STEWART said that traumatic neurasthenia was a genuine medical illness, whereas "litigation neurosis" was a legal complaint; in the courts the two conditions shaded into one another, and it required much skill to disentangle them. Litigation neurosis might be compared to a drink, originally innocuous, to which various exciting ingredients were added, so that it became a rather expensive and uncertain cocktail. The purely medical aspects of illnesses which became the subject of litigation would be a simple affair were it not for the element of compensation. The Workmen's Compensation Act had had widespread beneficial effects, protecting the injured workman against the careless, unscrupulous, or selfish employer, but one could not help thinking that it contemplated in the main the gross physical accidents arising out of employment. Nervous symptoms following accidents might be recognized as of two classes: those due to the expectation of financial solatium, and those due to actual physical injury. The patient's family and friends, his solicitor also, heightened the symptoms, and thus the original condition was elaborated, decorated, and intensified. The manufacture of symptoms, if conscious, was branded as malingering, but much more commonly it was an unconscious affair. The injury afforded the patient a temporary freedom from work, his accident evoked sympathy, and discussion with his family, friends, and solicitor fostered resentment. In a series of 17 compensation cases he had tried to obtain information as to what happened after the settlement. In 10 of them no medical particulars could be traced subsequent to the verdict; of the remaining 7, 6 had promptly recovered and gone back to work. In some of these cases large sums—up to £1,000 or more—had been awarded. Even the loss of his claim sometimes had a beneficial effect on the patient if he knew that it was final. A pension as a solatium was less advantageous for both parties than a lump sum, for the pensioner tended to aggravate and maintain his symptoms in order to "earn" his pension.

Dr. RISIEN RUSSELL said that in cases where there was no question of litigation he had found precisely the same factors at work to produce neurasthenia. One of the provocative factors leading to litigation was sometimes the attitude of the medical practitioner representing the company, who had been known to display incredulity and brusqueness and—in one case only—what almost amounted to brutality, though, on the other hand, Dr. Russell had seen the examination carried out in the most gracious way. But an unkind attitude on the part of the medical man appearing for the company not only aroused fear in the patient, who suspected that an effort was being made to defeat him, but also aroused the antagonism of the patient's doctor, who set out to protect his patient, and thus all the elements of a litigious quarrel were introduced. People injured in the hunting field who did not develop these symptoms were those who could afford to be ill, but when a man was earning a small wage and had a family to maintain the prospect of being set aside for many weeks contributed greatly to his anxiety. There was no need to assume malingering. In many cases litigation might have been prevented by proper consultation beforehand between the medical men on the two sides. He had frequently been consulted by employers, but although in a sense on the opposite side, he conducted his examination of the patient and discussed the matter with his doctor in such a way that agreement was often arrived at without going into court.

Dr. W. A. BREND, speaking from the point of view of a medical referee attached to three county courts, said that there had been a very marked decline in recent years in the number of cases coming into court. Two considerations seemed to help parties to come to a compromise: a belief that if the case was settled quickly the applicant was more likely to recover quickly, and also the great uncertainty as to how the case might result in court. He thought the question of tremors and reflexes very important.

Dr. W. SALISBURY SHARPE said that it was a commonplace during the war that the graver injuries were rarely followed by shock of any kind. Most of the neuroses following injury were in fact effects of fear. The worst case of so-called shell shock he had seen was that of a man who had been for nearly ten years wholly incapacitated by a purely functional paralysis, and yet who had been at no time nearer the war than Plymouth. Another patient, incapacitated for life, was a fireman on an engine which nearly came into collision with another engine, but in fact did not. There was no injury, but severe fright.

Sir WILLIAM WILLCOX agreed with Mr. Macmillan's view that the final decision in these cases ought to be left to judge and jury, for the result would be a more commonsense and practical decision than one which emanated from a body of experts, medical or legal; but the best expert evidence should be available to assist the court.

Sir FARQUHAR BUZZARD said that he had not had an answer to his question: Where a certain train of events, chiefly psychological in nature, followed an accident, whose was the responsibility?

Mr. MACMILLAN, in reply, said that he had been interested in what had been said about the curative effect of a verdict. It was not possible for any lawyer to answer categorically the question put to him by Sir Farquhar Buzzard. All that the law could do was to proceed on the best evidence it could get, and so it threw the ball back to the medical profession. He suggested that there was no true distinction between a psychological and a physical injury, because he rather understood that the psycho-pathological state would be found to be associated with some form of organic lesion, and he had, indeed, on the basis of what he had heard in evidence, committed himself to a statement of that kind in the report of the Royal Commission on Lunacy.

FRACTURES OF THE SPINE.

A MEETING of the Section of Orthopaedics of the Royal Society of Medicine was held on December 6th, with Mr. W. ROWLEY BRISTOW, the president, in the chair, for a discussion on fractures of the spine.

Mr. GEOFFREY JEFFERSON (Manchester), speaking first of the ordinary compression fracture, drew attention to the effect upon the spinal column of head injury. If the skull was struck by a hard body of moderately high velocity the almost certain result was fracture of the skull, but if the injuring body was soft and yet heavy, like a sack, the skull would probably escape injury, and the full effect would be felt upon the spine itself. It was possible for a force to be so adjusted that it would be unable to overcome the resistance of the skull while overcoming that of the spinal column. The force might vary in weight,

duration, and point of contact, and to this had to be added a very common thing in vertebral injury—namely, the movement in an oblique direction of the force itself, or of the vertebral column under the influence of the force. In the vertebral column there were two structures, one of them anterior, consisting of the vertebral bodies, and the other posterior, of the pedicles and laminae, and the former was much more easily collapsible than the latter. The speaker then went on to show statistics regarding injuries of the vertebral column treated at the Salford Royal Hospital from 1919 to 1927. The total number of such cases, not including fractures of the spinous and transverse processes, was 85, in 67 of which the level of the vertebral injury had been accurately localized. In 34 the injury was in the cervical vertebrae, in 13 in the thoracic, and in 20 in the lumbar. These cases, as well as 2,000 cases from literature, showed that there were two outstanding peaks of incidence, one in the lower cervical region, at the fifth and sixth vertebrae, and the other at the twelfth thoracic and first lumbar. These two groups of injuries were the result of entirely different causes. Practically the whole of the cervical ones were due to head injuries, while the others were caused by flexion fracture of the spine itself, particularly from such accidents as falling on the nape of the neck or on the shoulders. It was very difficult to produce fracture in the middle of the thoracic spine by compression, and the incidence of such injuries was very low. The cervical portion above and the lumbar portion below were the main sites of injury. After mentioning other points regarding anatomical structure and the mechanism of injury Mr. Jefferson concluded with a word about treatment. The ideal which surgeons had in view, he said, was always reduction, whether obtained simply by manipulation or by an open operation, but he was doubtful as to the value of the latter in very many cases. Of the 18 patients who died in the Salford series just quoted, 16 died within the first week after injury, and none of them would have been saved by open operation.

Dr. GEORGE RIDDOCH advanced some considerations from the neurological standpoint. The clinical course of a severe spinal injury, he said, might be divided into three stages. In the first stage there was acute paralysis and muscular flaccidity, with great diminution of reflexes and retention of urine—a more or less complete physiological block. Part of this disturbance of function was due to quite transient causes, such as oedema, and perhaps haemorrhage, and part was the result possibly of permanent structural defect. For many years it was looked upon as axiomatic that if the spinal cord was transected complete and permanent abolition of reflex function became evident, but this had been shown to be fallacious by the experience of the war. It was true that it held good in certain complicated cases, but in uncomplicated cases reflex function, even after transection of the spinal cord, began to return within a week or fortnight of the injury. Usually the first manifestation of it was an alteration in plantar response. About three weeks after the injury the tendon reflexes began to return—first of all ankle-jerks, then knee-jerks—and the retention of urine was no longer complete. These reflex activities gradually became more vigorous, especially the flexor reactions of the lower limbs. This was the second stage. It was clear that, although the cord might be completely transected, the reflex activities could return. Patients with completely transected spinal cord might live for a considerable time. There was one case in literature of a woman who broke her back twenty-five years before and was still living. The longest case which had come under his own observation dated back for eleven years, to a war injury. The man was still active and went to his business. But too many such cases developed bladder sepsis and other conditions, such as pneumonia, so that a third stage was reached in which there were regressive changes, mirroring in the backward direction the improvements noticed in the second stage. The bladder, after having returned to more or less regular function, once more retained the urine, and finally perhaps, before death took place, all the patient's reflex activities were abolished. The indications for operation in spinal injuries were few, and it had to be realized, in the first place, that the main damage was immediate and irreparable in so far as anatomical change was present, and that it was impossible, during the period of spinal shock, to determine how much damage was due to such structural alteration and how much to a transient disturbance. No operation ought to be undertaken in any circumstances until the period of spinal shock was over—that is to say, from two to six weeks after the injury itself.

Dr. BERTRAM SHIRES continued the discussion from the standpoint of the radiologist. He believed that injuries of the spine were not sufficiently studied radiographically, but the method, especially with the use of stereoscopy, was capable of very great refinements. For example, he believed subluxation of the vertebrae to occur and to be discernible by efficient *x*-ray stereoscopy. The antero-posterior *x*-ray view of the upper cervical spine could be obtained only through the mouth, and this was not as easy as it appeared, on account of the different shape of the occiput in different persons. The *x*-ray diagnosis of fractures of the transverse processes, especially in the lumbar region, was rather difficult because of conflicting shadows of muscles and intestinal contents; only by careful stereoscopic radiography, again, could one be sure of the appearance. In fractures of the coccyx the lateral view was the important one. Fractures that caused encroachment on the spinal cord revealed themselves without the aid of lipiodol.

Mr. GEORGE STEBBING gave an analysis of the cases of fracture of the spine received recently at Lambeth Poor Law hospital. The number of cases was increasing rapidly. During the three years 1919-21 there were five cases; in 1922-24 twelve cases, and in 1925-27 thirty-two cases. This was due to the increasing frequency of street accidents, many such cases finding their way into a Poor Law hospital, especially if they were of such a nature as to require long institutional treatment. But spinal injuries appeared to be increasing at a greater rate than injuries to the limbs. Of the thirty-two cases received during the last three years, fourteen had gross injury, and five died in hospital. The date of death was, in general, a few days after the injury, but in one exceptional case a man died many years after his injury, a fracture of the dorsal spine which he had sustained at the age of 11. He had had a spastic paraplegia, but had been able to get about on crutches and earn his living as a hawker. He died of pyelonephritis, which was the cause of death in all the cases of any long standing. Only a minority of the fractures were associated with gross nervous lesions, and those cases in which such symptoms were absent were still very commonly not diagnosed early, or, if diagnosed, were not treated by prolonged immobilization, which was the best treatment. Decompression operations had not proved to be of any value in this series.

Mr. T. H. OPENSHAW agreed with the last speaker that most of these cases died of pyelonephritis, also that long immobilization of the spine was essential for the recovery of many of these fractures. There were many cases of injury to the spine which had practically no nervous symptoms, and those were cases with which it was very important that the orthopaedic surgeon should be familiar, because they were liable to get into the hands of bonesetters, and to do the profession a great deal of injury. In one series of cases, having seen four deaths in patients with definite compression paraplegia, which had all the symptoms pointing to the cord being cut across, he determined to save if possible a fifth man similarly injured, and accordingly performed an operation which involved the wiring of about five of the vertebrae together, and the man recovered.

Mr. ST. J. D. BUXTON reviewed a small number of cases which he had had the opportunity of investigating during the last five years. They numbered 29; 17 patients died, 7 of them immediately; 11 survived and were well, and one other was unlikely to live. In nine cases the site of injury was at the fifth and sixth cervical vertebrae and in seven in the region of the tenth to the twelfth dorsal, so that his figures, although so small, bore out those of Mr. Jefferson as to the two principal peaks of incidence.

Mr. JOHN EVERIDGE raised the question as to what should be done with regard to bladder infection. In these cases of spinal injury there was at first retention of urine, which later passed on to retention with overflow, and

after a variable period a condition of periodic micturition was brought about. In fact, the bladder in the later stages had the condition which one associated with children up to about the age of two years. If patients could only be tided over this period without infection there might be some hope. He wondered whether early suprapubic cystotomy, to be carried out as soon after the injury as possible, was to be recommended as a procedure not only for combating but for preventing infection.

Mr. P. B. ROTH described a case at the Miller Hospital, following on what Mr. Everidge had just stated, in which, after consultation with his colleagues, it had been decided on the morrow to do a suprapubic cystotomy. It was an interesting question whether, if this operation were carried out a day or two after the injury, cystitis would be prevented. Dr. J. F. BRAILSFORD showed a large number of *x*-ray pictures illustrating the appearances in various conditions of spinal injury.

OPERATION FOR PAPILLOMA VESICAE.

AT the first meeting of the Midland Obstetrical and Gynaecological Society at the Medical Institute, Birmingham, on November 8th, the President, Professor D. L. RAYNER, in the chair, Mr. CHRISTOPHER MARTIN (Birmingham) read a paper on the operative treatment of papilloma of the urinary bladder.

Mr. MARTIN said that papilloma of the bladder occurred much more often in men than in women, and was easily recognized by the sudden onset of haematuria, which rapidly increased in severity, by the finding of papilloma fragments in the urine, and by cystoscopic examination. In the operative treatment the bladder was washed out with some non-toxic antiseptic, such as iodine water, and filled with from 10 to 20 ounces of the same solution. The patient was now put into the Trendelenburg position at about an angle of 45 degrees, and the abdomen was opened by an incision in the middle line extending from the middle of the pubes upwards for about four inches, when the anterior surface of the bladder protruded into the wound. Two temporary silk traction sutures were passed with a curved needle through the muscular wall of the bladder about an inch apart, one on each side of the middle line, and the bladder was opened with a sharp scalpel by a mesial incision from two to three inches long. As soon as the lotion distending the bladder had escaped, it was advisable to put two other silk sutures through the cut edges of the mucous membrane to act as additional tractors. The interior of the bladder was wiped dry with soft gauze pads, care being taken not to bruise the growths and start bleeding; the cavity was carefully inspected with a good light, and the position of the growth or growths determined. A tubular metal speculum, three and a half inches long and an inch and a half in diameter, was passed into the bladder through the wound, and the growth made to project into its lower opening. This speculum was of great service in isolating the growth, in keeping the field of operation nearly dry, and in protecting the abdominal wound from contact with the cautery. The base of the papillomatous growth was then seized with a stout pair of curved artery forceps at the point where it sprang from the mucosa, and was crushed by closing the forceps firmly. With scissors or Paquelin's cautery the growth was cut or burned away close to the upper surface of the forceps, and the cautery point, heated to a dull redness, passed to and fro over the charred stump; if this was done slowly and deliberately there would be no subsequent haemorrhage. The forceps were cautiously loosened, and if haemorrhage restarted the pedicle was cauterized again. When the forceps were removed the pedicle should be a thin, bloodless, horny ridge, almost flush with the mucosa. With multiple growths the same procedure was followed with each in turn, until they were all completely burned away. The whole of the interior of the bladder was now carefully inspected, and any small growths isolated with the speculum and burned out; for such papillomata—not larger perhaps than a pin's head—the fine needle point of the cautery was very useful. The bladder was then gently wiped out with soft gauze swabs, care being taken not to start bleeding by roughly rubbing the charred tumour bases. The silk traction sutures were removed, and the wound in the bladder was closed without drainage from below upwards with a continuous suture of fine catgut. It was important not to pass the stitch through the mucous membrane. The line of continuous suture was usually strengthened by three or four interrupted mattress sutures. A "cigarette" drain was passed through the lower part of the abdominal wound into the cellular space between the bladder and pubes; it was removed in about forty-eight hours. A glass self-retaining catheter about three inches long was inserted into the bladder through the urethra. The upper slightly bulbous end lay just above the sphincter and the lower flanged end outside the meatus. A short rubber tube passed from it to a urinal in the bed, laid between the patient's thighs. This glass catheter was removed every twelve hours and a freshly sterilized one inserted; this continuous drainage of the bladder was maintained for ten or twelve days after the operation. The abdominal skin sutures were removed on the twelfth day, and the patient allowed to sit up, if all was well, on the fifteenth day. During this fortnight the diet must be light and non-stimulating, with plenty of bland diluent drinks, such as barley water.

Degeneration Changes in Fibroids.

Mr. FURNEAUX JORDAN read the notes of four cases of fibroids undergoing degeneration, and exhibited specimens of two of them.

The first was a patient, aged 55, from whom the late Professor Taylor had removed the ovaries for a large fibroid in 1912. She came to Mr. Jordan in 1917 with a history of five years' amenorrhoea, but no diminution in the size of the tumour, and lately there had been attacks of acute pain in the abdomen and a slight blood-stained discharge. The uterus was removed and the fibroid was undergoing red degeneration.

From the second patient, who was 43 years old, both appendages had been removed in 1912 for a left tubal pregnancy and a cystoma of the right ovary. Five weeks before the date of the meeting she had been seized with pain in the back, circling round to the front of the lower abdomen, and scalding pain on micturition, with frequency. A fibroid was found, two weeks later, completely filling the pelvis and rising half-way to the umbilicus. For three and a half months she had menstruated too often, each period lasting for two weeks and accompanied by bearing down pain. The tumour was removed by subtotal hysterectomy, and very dense adhesions were found on the left side, the site of the previous tubal gestation. The fibroid was largely submucous, and was beginning to undergo sloughing on the surface. The patient was making a good recovery.

The third patient, aged 62, was single; the menopause had occurred at 51. For many years she had felt a weight inside her, and always tired easily; three years ago very troublesome frequency of micturition had started and was now getting progressively worse. The pelvis was filled by a hard rounded tumour which resembled the foetal head in the second stage of labour. During hysterectomy the uterus was found to be a thin shell stretched over an old fibroid which had become calcareous; it had probably become wedged in the pelvis recently. The patient had regained very good health.

The fourth patient, aged 67, had had no children and had suffered from rheumatoid arthritis for many years. Twenty-five years previously the ovaries had been removed for fibroid tumour of the uterus. For three months she had had a discharge, white at first, but for over a month blood-stained; for three months pain had persisted in the lower abdomen. There was a hard, rounded, tender mass, about the size of an apple, in the uterus. Hysterectomy was performed and disclosed universal dense adhesions, coils of intestine matted together and growing from the uterus into the right broad ligament, and a fibroid, calcified on the surface but not in the interior. The patient had made a good recovery.

Mr. Furneaux Jordan said these cases showed that fibroids, even after the menopause, whether natural or produced artificially, might cause further trouble by undergoing degeneration; he doubted whether this contingency was sufficiently remembered when patients were advised to wait until the menopause had occurred. It was possible that in the first two cases, and almost certain in the second one, the ovaries were not removed in their entirety. It would be a matter for subsequent observation whether cases of fibroid treated by deep *x*-ray therapy, with the symptoms completely arrested, would not, later on, be liable to undergo degenerative changes.

Obscure Costal Growth.

Miss HILDA SHUFFLEBOTHAM (Birmingham) showed a case for diagnosis.

An unmarried woman, aged 30, had had a history of snuffles at the age of 3 months, followed by "inflamed eyes" when 4 years old. She had been treated for syphilis, but the

Wassermann reaction was still positive. The mother was syphilitic, and the father had died from general paralysis at the age of 28. In May, 1927, the patient had been prevented from working by a pain in her left side. Four months later she noticed two swellings on the chest wall; tuberculosis of the ribs was eventually excluded by negative *x*-ray findings. She also suffered from frequent vomiting, pain in left side, general malaise, and depression. The two large swellings on the left side of the chest were about the same level; one was near the anterior border of the axilla just below the breast, the other just behind the posterior border of the axilla. They were apparently attached to the ribs and partially cystic, with indurated tissues around. They were tender, and hot, but there was no redness of the skin, nor were they attached to it. The *x*-ray examination showed some slight involvement of the ribs, but no abnormal lung condition was present; the swellings were entirely outside the thorax. About 40 c.cm. of practically clear yellow fluid was withdrawn from the anterior swelling. No tubercle bacilli and no definite tumour cells were found, but there was a predominance of polymorphonuclears. Both swellings were completely aspirated and eusol was injected. The ribs were found to be tender on pressure after aspiration. The blood count showed diminution in the red cells and an increased percentage of large lymphocytes. A second *x*-ray examination showed much more marked involvement of the eleventh and twelfth ribs, with complete bone absorption, and involvement of the lower border of the tenth rib.

Miss Shufflebotham said that the differential diagnosis lay between (1) syphilitic periostitis of the tenth, eleventh, and twelfth ribs, with localized collections of fluid; (2) sarcoma of ribs; and (3) tuberculous periostitis of the ribs. The history and physical signs seemed to point to the first diagnosis as being correct.

Echinococcal Cyst of Pelvis.

Mr. ALFRED B. DANBY described a case of a primary extraperitoneal echinococcal cyst of the pelvis.

A healthy female child, aged 6, had suffered from five attacks of acute retention of urine during the preceding four months, and on each occasion catheterization was necessary. A median hypogastric swelling reaching half-way to the umbilicus was found; it was unaffected by catheterization, and was continuous with a large cystic swelling in the pouch of Douglas occupying most of the pelvic cavity. A diagnosis was made of an impacted ovarian cyst, probably dermoid. At an operation the bladder was found displaced upwards several inches above the symphysis pubis, and behind it was a tense cystic swelling the size of a foetal head, which occupied the pouch of Douglas, was retroperitoneal, and appeared to distend the layers of the broad ligament. The abdomen being carefully packed off, a small incision was made into the swelling, a trocar inserted, and slightly opalescent fluid drained off which was found to contain the characteristic hooklets. On enlarging the opening the cyst was completely shelled out, and the typically translucent elastic wall of the endocyst was recognized. The abdominal contents were inspected, including the liver, but only a small rudimentary cyst barely 1/2 in. by 1/4 in. attached to the distal free end of the great omentum was found; this was removed. Great care was taken over the peritoneal toilet: the retroperitoneal cavity was packed with iodoform gauze and a rubber tube was inserted. No signs of further infection had appeared subsequently.

Mr. Danby said that the specimen showed the ectocyst and endocyst clearly, but there was no sign of formation of daughter cysts, which in the opinion of Sir Alexander MacCormick were only formed after rupture of the cyst wall of the parent hydatid. The cyst appeared to have arisen from the cellular tissues at the base of the broad ligament, but how the embryo invaded these tissues must be largely a matter of conjecture. The early recognition of the cyst could be explained by its causing urgent urinary symptoms. Examination of the blood showed no eosinophilia. No other cases had been reported in the same district, and there was no history of eating watercress or keeping pet animals.

TREATMENT OF RAYNAUD'S DISEASE.

AT a meeting of the Section of Medicine of the Royal Academy of Medicine in Ireland on November 25th the president, Dr. G. E. NESBITT, showed jointly with Mr. A. A. MCCONNELL a case of rather severe Raynaud's disease treated surgically in a woman who had suffered for six years.

The patient's hands were almost constantly cold, blue, and stiff, and the skin about the nails of the right hand frequently threatened to break down. She had been compelled to abandon her occupation of nursing in consequence. On November 8th Mr. McConnell had performed a sympathetic block by injection of alcohol into the sheath of the right brachial artery. Immediate improvement had been noticed in the condition of the right hand, which became pink in colour, the hardness and stiffness disappeared, and the patient could now use her fingers even for fine work with comfort.

Mr. McConnell said that although the immediate effect had been quite satisfactory these cases were liable to relapse, and that permanent cure could scarcely be expected from this method of treatment.

Sir WILLIAM WHEELER said that he had performed the operation of sympathectomy on many occasions, but in true Raynaud's disease and in thrombo-angiitis obliterans he met with no marked success. Vaso-dilatation occurred below the site of operation, and the temperature of the part was materially raised. In impending gangrene, certain cases of causalgia, and in intractable ulcer, the operation was followed by good permanent results. In true Raynaud's disease of the lower extremities Adson and others had obtained success by combining the operation of sympathectomy with removal of the lower lumbar sympathetic ganglia. Sir William Wheeler had tried Sampson Handley's method twice; he believed it produced the desired effect, but he did not find it more simple to perform than the removal of the sympathetic plexus with the adventitious arterial sheath. The operation was followed by remarkably quick healing in refractory ulceration and torpid wounds, one of the most striking sequels being the relief of the pain which was associated with vascular disturbances in the extremities; this occurred even in Raynaud's disease and in thrombo-angiitis obliterans, which otherwise were not benefited. Painting the segment of the vessel with phenol had recently been suggested as an alternative to Sampson Handley's method.

Dr. L. Abrahamson stated that in one case of Raynaud's disease no permanent good result had been obtained, and there had not been relief of pain after the operation.

Mr. W. PEARSON said he had often performed this operation during the war, but so far as nerve conditions were concerned he had found it useless, and had abandoned it; he had not tried it for Raynaud's disease. He referred to a case of frost-bite in the feet with gangrenous ulceration, and almost perpetual vesication of the dorsum in both feet, which sometimes broke down into superficial ulcers; after the operation the patient had recovered completely. In a man aged 70 with symptoms of intermittent claudication in the right leg the pain had been greatly relieved since operation.

Propulsion Through the Colon.

Dr. C. L. MCDONOGH read a short note on the movement of the contents in the large intestine, and showed illustrative radiograms. The importance of "mass movement" in the passage of material through the transverse and descending colon was emphasized, and the stages of this movement clearly shown by radiograms from the author's cases.

Dr. M. R. J. HAYES said that it was due to the investigations of Cannon and others in America that so much was now known about the movement of the intestinal contents. Formerly it had been taught that the movement in the colon had an onward direction; now it was known that there were two varieties, a pendulum and an onward propulsive movement. When the contents of the colon entered the rectum there was a desire to empty this part of the bowel. If this desire was neglected the rectum enlarged, and the desire to defaecate passed away till the next day. This had been described as dyschezia. He did not think that this fact was appreciated by those who had not recently studied physiology.

The PRESIDENT thought that neglect to respond to the stimulus of the rectum was responsible for most cases of constipation.

JAMES MACKENZIE INSTITUTE.

ON November 15th Dr. EDWIN MATTHEW read a paper on the clinical significance of haematemesis. He first enumerated the conditions in which haematemesis might occur, and pointed out that it might be present in certain blood conditions associated with high blood pressure, or from a variety of other rarer causes. He quoted statistics derived from the clinical material in his own wards in the Royal Infirmary, Edinburgh, which went to prove that in the diagnosis of chronic gastric ulcer, especially when other signs and symptoms were indefinite or atypical, haema-

temesis was an all-important factor in the diagnosis. In his experience haematemesis in duodenal ulcer tended to be more severe and more prone to prove fatal than in gastric ulcer. A large, sudden haematemesis might, however, be associated with acute gastric ulcer, high blood pressure, and also might occur in splenic anaemia, rendering differential diagnosis difficult. Haematemesis, especially if repeated, offered an indication for surgical treatment in chronic gastric and duodenal ulcer, and in splenic anaemia, in which splenectomy might be performed with cessation of haematemesis.

Reviews.

THE NEUROTIC PERSONALITY.

DR. R. G. GORDON, honorary secretary of a special Psycho-analysis Committee appointed by the British Medical Association, and the author of *Personality* in the International Library of Psychology, reviewed in our columns in June, 1926 (p. 949), has now written *The Neurotic Personality*.[1] This is of a more general character, and addressed not so much to the specialists as to the rank and file of the profession, and even to the general public, who, he considers, should also appreciate the vagaries of the neurotic. In the first chapter, on the construction of personality, the influence of the internal secretions is considered, and it is pointed out that the anterior lobe of the pituitary, which makes for masculinity, may be responsible for conflicts between femininity and masculinity in a woman with anterior hyperpituitarism. Dr. Gordon agrees with Professor W. McDougall that failure of integration within the self-regarding sentiment is the characteristic mental lesion in neurotic states, and that attempts at treatment should be directed to restoration of this integration.

The Freudian theory attributing neurosis to sex influences is discussed, as is the Oedipus complex, and, without accepting these views, appreciation is expressed of Freud's services to psychology. Among other conceptions of the neuroses, Janet's view that they depend on inability of the individual to adapt himself to life, an incompetence due to failure in psychic force, is quoted as being singularly complete, if the premisses on which the hypothesis is based could be established; Dr. Gordon rather wickedly adds that the gist of Dr. E. D. Adrian's contribution to the Psychological Congress in 1923 was that there is nothing, except lack of the slightest evidence in its favour, to prevent the discussion of a special form of energy which differs from other forms, as electricity does from heat. After accounts of the psychological types in neurosis, the anxiety states, obsessions, hysteria, the dissociation syndromes, and exhaustion neurosis, there is a well considered chapter on the physician and the neurotic individual, in which emphasis is laid on the importance of a real understanding of the patient, who is like a young and frightened horse dashing about in a field and trying to get out, while all the time the gate through which the physician must lead him is open. But it must be realized that no one, however skilled, can succeed with every neurotic.

The part the physician should play in treatment, the Freudian transference between them, and the risk to which the medical man may be exposed are all explained, and the subject of treatment is fully dealt with under the heads of the scope and limitations of psycho-analysis, suggestion, and persuasion. The concluding chapter of this well written and open-minded book deals with the relation of the patient to the public at large, and the attitude of the man in the street to the neurotic.

CRIME AND CRIMINALS.

THE number of books on crime and criminals which are being published at the present time is very large; even those that are sent to us are so numerous as to be embarrassing. We may, however, notice a book on *Crime and the Criminal*[2] by Dr. PHILIP ARCHIBALD PARSONS, Professor of Applied Sociology in the University of Oregon, because, though it is primarily concerned with the methods followed in the United States of America, it has considerable interest for British readers. Legal processes for the arrest, conviction, punishment, and amendment of the criminal differ considerably in the two countries, but their aim is the same.

The criminal is a menace to life and happiness. He imposes financial burdens upon society and is himself an economic liability. He is a great obstacle in the way of social progress and is a striking example of social inefficiency. Society views him with a lingering fear, a fear which in special cases develops into terror and even hysterical manifestations. There is a cry for vengeance, or a clamour of special pleading which may defeat the end of justice. The loss due to crime in the United States is estimated at five to six billion dollars a year, and this estimate takes no account of loss due to "graft," nor of the costs of police, law courts, judges, juries, or of penitentiaries. The modern criminal is not like his popular picture. Once two celebrated actors took the parts of Fagin and Bill Sikes in a stage version of *Oliver Twist* played in New York. The chief of Pinkertons, and later of the New York detective force, was asked to see it, and decide whether the actors were true to life. He reported that the play was fine, but if the actors had stepped on to Broadway they would have been arrested on sight. "They looked too much like criminals. And present-day criminals don't." Lombroso was responsible for fixing a physical type in the public mind. His conclusions were wrong, as has been conclusively shown by the work of Goring and Karl Pearson, but he did good by initiating investigations. Goring's conclusions better meet the case—that criminals as a class are inferior human beings, characterized chiefly by their stupidity and inability to play the game according to the rule of modern society.

Dr. Parsons recognizes varieties of criminals, thus: insane criminal, born criminal, habitual criminal, professional criminal, occasional criminal, the criminal by passion or accident. The tendency is to the belief that while mental deficiency is not in itself a primary cause of antisocial conduct, under certain conditions it becomes a contributing factor in the product of conduct disorders. Whether or not crime has increased in incidence is a moot point; our ideas of crime change. But there is evidence—so far, at least, as the English-speaking peoples are concerned—that there is a modification in the violence and seriousness of criminal acts. The decrease, Judge Hoyt of New York City says, is the result of civic and social effort to eliminate the factors responsible for delinquency and neglect.

In cold countries crimes against property are, it appears, more prevalent than crimes against the person. Obscene acts rise from a minimum in cold January to a maximum more than double the minimum in warm July. Crimes against property reach their height in early winter. In many European countries statistics indicate that crimes against property—principally theft—rise and fall with the price of the principal cereal food. There is reason to believe that this correlation exists with a fair degree of regularity all over the world. Men who work for themselves have a much lower rate of criminality than those working for a wage. At the present time there is no evidence that the system of education has either increased or decreased crime. It has been pointed out with what frequency crime is preceded by truancy from school, itself a sign of individual maladjustment.

After dealing with the criminal and modern crimes, Professor Parsons proceeds to consider the reaction of society to the criminal, and discusses the police, theories of punishment, reform of penal institutions, substitutes for imprisonment, the treatment of youthful offenders, and new conceptions and treatment of crime.

His review of trial by jury is of great interest. In this country there is no difficulty in getting a jury empanelled with order and speediness; it is otherwise in

[1] *The Neurotic Personality.* By R. G. Gordon, M.D., D.Sc., F.R.C.P.Ed. International Library of Psychology, Philosophy, and Scientific Method. London: Kegan Paul, Trench, Trubner and Co., Ltd. 1927. (Demy 8vo, pp. x + 300. 10s. 6d. net.)

[2] *Crime and the Criminal: An Introduction to Criminology.* By Philip Archibald Parsons, Ph.D. New York and London: Alfred A. Knopf. 1926. (Extra Post 8vo, pp. xvi + 387. 10s. 6d. net.)

the United States, where, on occasions, weeks have been wasted on this initial procedure. "In 1920 two months were required in securing a jury, and 1,200 prospective jurors were examined." His criticism of the jury in sanity trials is particularly severe:

"Perhaps there was some excuse for the use of the jury in passing on the sanity cases in the days when insanity was detected by the obvious departure of an individual from what was considered to be a normal mental state. With the present development of the science of the mind and nervous system in health and disease, however, it is now a well known fact that the number of persons who reveal their mental pathology by conduct strikingly out of the ordinary is relatively small in proportion to those whose deviation from normal mental health is commonly detected only by the trained observer. Most of these would appear to the ordinary jury as normal individuals."

The author is disturbed by a sinister aspect of the present situation, in which an individual of good standing in the community discovers that he does not lose caste with his group by unsocial or antisocial behaviour.

"The law is a crude device for restraining conduct. Only the stupid and impulsive, the poor, and the weak violate it. The clever and the rich can gratify their unsocial and antisocial desires to a great extent by extra-legal means, or, in many instances, by open defiance of the law. Antisocial mobilizations of power, such as criminal political organizations, may be strong enough to afford members protection against the authority of the State."

This is a book which every magistrate might read with advantage, and will be a help to those who have to do with child delinquents. There is an excellent bibliography.

OTOLARYNGOLOGY IN GENERAL PRACTICE.

DR. CROW describes his book on *The Ear, Nose, and Throat in General Practice*[3] as an informal guide to the main principles, and thus disarms criticism, for there is no attempt to present a complete, even though condensed, account. The author has selected certain aspects upon which he holds strong views, and considers that the mind of the practitioner needs to be enlightened, or at any rate clarified.

Although he touches upon other matters, the adequate treatment of acute otitis media, the prompt removal of foreign bodies from the air and food passages, and the technique of operations for removal of adenoids and tonsils are those which chiefly engage his attention, and he also advocates a wisely conservative policy towards the nose. The views expressed are sound and definite, and they relate to points about which many practitioners hesitate, but it may be doubted whether the vigorous and unrestrained language of the author really produces that additional emphasis after which he evidently strives. In a volume of the same size a balanced review of the whole subject might have been presented by omitting many redundant illustrations and many pleonasms in the text. The result is a book which is no colourless compilation, but full of character, and evidently based upon intense personal convictions, with the natural corollary that the outlook is limited.

LIVING MACHINERY.

Living Machinery,[4] by Professor A. V. HILL, contains six lectures he delivered at the Royal Institution last Christmas. The book deals chiefly with the neuro-muscular mechanisms of the body, and especially with the laws governing the activity of the voluntary muscles. The mechanisms of cardiac and involuntary muscle, however, are considered also. The book is written in an interesting style, and shows that Professor Hill has a special gift for simple and lucid exposition. Although originally written for children, there are few adults who will not acquire much interesting new knowledge from its perusal.

The last chapter, entitled "Speed, strength, and endurance," has a particularly wide interest, for in it are considered the factors that govern the making of athletic records. Endurance is shown to be due chiefly to the rate at which the heart can supply oxygen to the body and to the capacity of the body to run into oxygen debt. The author suggests that it would be an interesting experiment to construct a suitable tunnel and fill it with pure oxygen; he thinks it probable that under such conditions a champion would be able to run the mile in less than four minutes. Another point he makes is that ability to climb at high altitudes probably depends on the same factors as are necessary for success in long-distance running; he thinks, therefore, that the long-distance runner is the most likely type of person to succeed in climbing Mount Everest.

The book is full of examples of the way in which general physiological principles can be applied to practical problems. Anyone, indeed, who wishes to get a general idea of the chief recent advances in our knowledge concerning neuro-muscular mechanism will find this book very useful and interesting.

Unfortunately, functions of the body cannot be explained without assuming an elementary knowledge of physics and chemistry, and those who do not possess such knowledge may not always find it easy to follow Professor Hill's statements, although, as has been said, he writes in a remarkably simple and clear style. All, however, who have knowledge of elementary science will find the book both interesting and instructive.

PLOUGH COURT.

THE history of any long established business must needs be interesting and in some cases romantic, and it is a pity that more have not been recorded. That of a great firm of chemists and druggists, such as Allen and Hanburys, is of special interest to the medical profession, whose activities have been so closely connected with those of the druggist; some of its members have taken important parts in the management of that firm. In *Plough Court: The Story of a Notable Pharmacy, 1715-1927*,[5] Mr. ERNEST C. CRIPPS has drawn a pleasant picture of the doings of the forceful but fine characters of the men who built up the business. Plough Court, Lombard Street, where Alexander Pope was born, has been the seat of this pharmacy ever since Sylvanus Bevan, the Quaker descendant of Jenkin ap Evan of Swansea, took a lease of No. 2 from Salem Osgood in 1715, and added No. 3 to it soon afterwards. For 157 years the same premises were used, and for almost exactly the same period the partners in the firm belonged to the Society of Friends. In 1893 the business became a limited company, with members of the family of Hanbury on its board of directors.

Sylvanus Bevan, like a number of his successors, was more than a business man. He ranked in his day as a man of science, and as such became a Fellow of the Royal Society, the first of five Fellows who were trained in the Plough Court pharmacy, not counting Luke Howard, F.R.S., who was at one time a partner and the founder of a firm still celebrated for its quinine and many other products. Bevan, although he did not hold any diploma, seems to have practised as a physician, and was known as Dr. Bevan. His son, another Sylvanus, gave up pharmacy to join the Quaker banking house of Barclay and Co. The name of Allen first appeared in the style of the firm when William Allen became a partner in 1792. Without neglecting his business he became widely known as a chemist and man of science. He had been "physician's pupil at Thomas's Hospital" and was elected F.R.S. in 1807. He was a friend of Sir Humphry Davy and lectured at the Royal Institution. Like others of the Quaker partners in the firm, no consideration of profit would induce him to forsake his principles, and it does not seem that he lost thereby. In order to contribute ever so little to discourage negro slavery he refrained from the use of sugar—a slave-made product—for forty-three years. His partner, Barry, refused to supply drugs to a French mili-

[3] *The Ear, Nose, and Throat in General Practice.* By D. A. Crow, M.B., Ch.B.Ed. Oxford Medical Publications. London: Milford, Oxford University Press. 1927. (Demy 8vo, pp. x + 150; 45 figures, 2 plates. 10s. 6d.)

[4] *Living Machinery.* By A. V. Hill, M.A., Sc.D., F.R.S. London: G. Bell and Sons, Ltd. 1927. (Cr. 8vo, pp. xiv + 256; 53 figures, 23 plates. 7s. 6d. net.)

[5] *Plough Court: The Story of a Notable Pharmacy, 1715-1927.* Compiled by Ernest C. Cripps. London: Allen and Hanburys Ltd. 1927. (Med. 8vo, pp. xviii + 227; illustrated. 10s. 6d. Medical practitioners may purchase one copy from Allen and Hanburys at the reduced price of 5s. net.)

tary hospital because he held that it was "professedly for the purposes of encouraging men to enter the army."

The name of Hanbury first appeared in the firm when Daniel Bell Hanbury, and his brother Cornelius, nephews of William Allen, became partners in 1824. Daniel Bell's son, Daniel, rivalled in scientific repute his great-uncle, William Allen. As a botanist and pharmacologist his fame was world-wide. At present the medical member of the firm is Mr. Reginald Janson Hanbury. Space does not permit further comment on the many interesting things in this book, which itself bears evidence of the widened interests of the company, for it has been printed and produced in the Bethnal Green factory. The descriptions of this factory and of that at Ware, where milk and malt preparations are made, and of the oversea branches and agencies and the Norwegian cod-liver oil factories, are all of interest. The book is well illustrated with portraits, views, and facsimile letters, and we feel sure that many medical practitioners will avail themselves of the offer of one copy each at the less than half price of five shillings.

NOTES ON BOOKS.

THE eighty-fourth annual issue of the *Medical Directory*[6] for 1928 has been published this week by Messrs. J. and A. Churchill. There are very few changes in it as compared with previous issues, and the care taken in the compilation of the records of 53,289 members of the medical profession is as evident as heretofore. Whereas in each of the four previous years, however, the annual increase was over 1,200, it is now noteworthy that the total has been increased this year by only 731 names, there being a decline in the sections devoted to Scotland, Ireland, and the Services. The increase in the number of names of medical practitioners in the Provinces is about the same as in previous years, but London shows a sharp drop compared with 1927. Dr. R. Fortescue Fox has again supplied a description of the spas and climatic health resorts of Great Britain, Ireland, and New Zealand; this covers thirty-seven pages, and it is conveniently arranged and well illustrated. At the end of the volume is a "late list," including new names and recent changes of address. The present issue of the *Medical Directory* fully equals the best of its predecessors, and as an indispensable book of reference will retain the favour it has won in the past.

In *The Game of Health*[7] Dr. J. MAXWELL TAYLOR sets out the principles of health education in the form of an analogy, and with a simplicity of language calculated to appeal to the older boys and girls of the elementary schools. The method adopted is well illustrated by the chapter headings—namely, "Games," "The health team," "The opposing team," "The playing field," "The strategy of the game," and "The score." Emphasis is laid throughout on practical rather than theoretical aspects, and a considerable number of useful suggestions are attractively given. The analogy of Association football is not unduly strained, since the modified game used as an illustration of the contest between hygiene and disease is not very different from that played by children on public commons. The book may be recommended as having an immediate value for children, and also as being likely to kindle in them an interest in the cultivation of health which, in later years, may lead to further study and more careful observation of its rules.

In *A Short Account of the Antiquity of Hindu Medicine*[8] Dr. DAVID C. MUTHU covers a period of 5,600 years, from 4000 B.C., the date of the Rig Veda, until A.D. 1600. The beginnings of civilization in India, with which medicine was contemporaneous, go back, as recent excavations in the Punjab and Sind amply prove, much further than those of ancient Greece, and it would appear that Greek and Arabian medicine was indebted to the Hindus, and not that the Hippocratic teaching influenced the medicine of India. From 2500 to 600 B.C., the Epic Period, the Indo-Aryans reached the zenith of their civilization, and the standard works of Charaka and Susrata then produced were revised and re-edited until A.D. 1550. In the Buddhist period (600 B.C. to A.D. 600) civilization began to decline, and anatomy, previously practised, was discouraged, but though surgery did not advance, the study of chemistry and medicine did. One of the last great men who threw lustre on Hindu medicine was Bhava Misra of Benares (A.D. 1550), who is said to have anticipated Harvey in speaking of the circulation of the blood, and to have prescribed mercury for syphilis.

The South American Handbook for 1928,[9] the fifth year, is a reminder of the importance of the great Latin American continent. Information on every topic is given in very readable and attractive form, and the print is never too small or indistinct. The steamship routes are set forth in detail, whether by the eastern route to Buenos Aires with calls at Bahia, Rio de Janeiro, and Santos, all of them important ports of Brazil, or by the western route to Valparaiso through the Panama Canal, with a call at Callao for Lima, the capital of Peru. The book contains one large coloured map of the continent, and many small sketch maps of particular areas. In the big map the vast extent of Brazil is clearly shown; most of its area is, indeed, still unexplored. Portuguese is the prevailing language of civilization in Brazil, but some Indian dialects persist. Elsewhere, from Venezuela in the north to Chile and Argentina, the language is Spanish. The seasons are, of course, reversed, and the South American summer is at its height in January. It may be noted that Buenos Aires, the capital of Argentina, actually lies further south than Capetown. The most striking trip the tourist can make is from Buenos Aires to Valparaiso across the continent from east to west; the journey can be broken at Mendoza, the garden of the Andes, and continued through the mountains in view of the highest peak—Aconcagua, 23,000 feet (said to be the highest mountain of the Western Hemisphere). A steep descent leads to Valparaiso, the chief seaport of Chile. The natural resources of all the different republics are described, as also the habits and customs of the Indian tribes—for example, the Araucanians of Chile; particulars will be found, too, as to climate and as to currencies and costs of living. The book has been carefully prepared, and no pains have been spared to show the magnitude of Latin American contributions to the real wealth of the world.

PREPARATIONS AND APPLIANCES.

A SIMPLE THERMOSTAT.

DR. J. H. TWISTON DAVIES has devised a simple thermostat which is inexpensive in construction. A piece of glass tubing (*a*), bent as shown in the illustration, contains mercury and a small drop (*e*) of a liquid which boils at the temperature desired. The inlet pipe (*b*) is drawn out to a point, and may, if desired, have a by-pass hole in it, or a by-pass may be arranged separately; the outlet is indicated at (*c*). A cork (*d*) is bored to take the tubing, and is thoroughly impregnated with paraffin. If the tubes are warmed before assembling them the apparatus is gas-tight. The liquids used are ether for the incubation temperature of 35° C., acetone for an embedding bath of 56° C., and carbon bisulphide for the hot plate at 47° C. When carbon bisulphide is employed it should be well shaken with a little mercury before use; this will prevent it blackening the mercury in the thermostat.

RADIOSTOL.

We have already mentioned on more than one occasion the preparation "Radiostol," manufactured and sold by the British Drug Houses. It is obtained by ultra-violet radiation of ergosterol and is believed to be identical with the substance previously known as vitamin D. Undiluted radiostol possesses 200,000 times the activity of good cod-liver oil, one-sixth of an ounce being the equivalent of a ton of cod-liver oil. It has hitherto been issued in an oily solution, but the firm has now sent us samples of an improved method of dispensing the substance in a sugar-coated pellet, into which has been incorporated a measured quantity of radiostol. A bottle of these pellets containing fifty can be obtained at the price of 4s. 6d. The existence of this preparation should facilitate antirachitic therapy, since difficulties associated with the pronounced taste of cod-liver oil can now be avoided.

THYROXINE TABLOIDS.

Thyroxine, the active principle of the thyroid gland, is now issued by Burroughs Wellcome and Co. as "Tabloid" Thyroxine in bottles of 100. Two strengths are available, 0.0001 gm. and 0.001 gm. The dose for adults is from 0.0002 gm. to 0.002 gm. orally. Minimum doses should always be given at first, and the optimum amount for each case should be determined by trial.

DRIED LIVER.

Messrs. Allen and Hanburys, Ltd., inform us that they have prepared, and are now in a position to supply, liver in the form of a fine powder, which is palatable and readily taken; 2 oz. of this product are stated to be equal in activity to 8 oz. of fresh liver. It is supplied in 1 oz., 2 oz., 4 oz., and 8 oz. bottles.

[6] *Medical Directory*, 1928. London: J. and A. Churchill. 30s. net.

[7] *The Game of Health*. By J. Maxwell Taylor, M.A., M.B., Ch.B., D.P.H. With introductory note by Sir W. Arbuthnot Lane, Bt., C.B. Glasgow: R. Gibson and Sons (Glasgow), Ltd. 1927. (Imp. 16mo, pp. 79; illustrated. 1s. 6d.)

[8] *A Short Account of the Antiquity of Hindu Medicine*. By David C. Muthu, M.D. Second edition. London: Baillière, Tindall and Cox. 1927. (Pott 8vo, pp. 53; 1 plate. 2s. 6d. net.)

[9] *The South American Handbook, 1928*. Edited by J. A. Hunter. London: South American Publications, Ltd., Atlantic House, Moorgate, E.C. (4½ × 7¼, pp. lxxii + 746. 2s. 6d. net; post free 3s.)

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SATURDAY, DECEMBER 17TH, 1927.

FRACTURES OF THE SPINE.

SEVERE injuries of the spinal column have long attracted the interest of surgeons and neurologists, but until recent years their incidence has been, generally speaking, confined to mining districts and those where what are called heavy industries are carried on. Formerly opportunities of studying these injuries were few in other places, but the great increase of fast and heavy motor traffic has made these—and, indeed, all manner of severe fractures—familiar to surgeons in most parts of the country, and particularly in places situated near the great cities and the main roads which lead to and from them. The effects of being hurled from a car travelling at high speed, or of being violently squeezed between two vehicles, are as damaging as those of a fall of roof in a colliery or of falls of the body from a height. Mr. George Stebbing's experience in only one London Poor Law hospital shows an alarming sixfold increase in the admissions of cases of fractured spine in the last decade. Whatever deductions from the totals may be necessary on account of the increased resort to Poor Law institutions in place of voluntary hospitals, they will not be such as to render the figures anything but startling. This being so, the Orthopaedic Section of the Royal Society of Medicine was well advised in choosing these injuries and their treatment for the subject of the discussion last week, and in asking so well qualified a member as Mr. Geoffrey Jefferson to open it. In his paper, of which an abstract will be found in our report of the discussion at page 1145, he dealt, as did most of the speakers who followed him, more with the symptoms and signs and pathology of these lesions than with the details of treatment. This is perhaps best accounted for by the reflection that the arrangement of the parts involved is somewhat complicated, and the mode of action of the forces concerned somewhat obscure, although essentially similar to the mechanism of fracture of a long bone from indirect violence. Nearly all indirect spinal fractures are the result of forced flexion. The few cases of fracture from hyperextension of the head are almost all confined to the odontoid process of the axis, and may be dismissed from present consideration. On the other hand, the opportunities of active treatment are few and small, and there is a very general agreement as to the principles of fixation and support on which treatment is based.

It is a commonplace of surgery that the gravity of every injury of the spinal column depends first on the presence of concomitant damage to the spinal cord which it contains or to the nerve roots which pass out through its foramina. It is perhaps less widely realized that without nerve injury a crush fracture of a vertebral body, unless early detected and promptly and properly treated, may cause long-enduring or permanent weakness, by rendering the great main beam or kingpost of the body framework unequal to its normal functions, apart from any lesion of the cord or its nerves. The effect of a compression fracture on the body of an individual vertebra is to change its outline, as seen in a lateral radiograph, from what is roughly a parallelogram to a wedge-like form. It is obvious that no surgical intervention can be expected to restore it to its normal shape at once, and that even partial spontaneous restoration, if it takes place, must be a very slow process. There is a general consensus of opinion in favour of treatment by long-continued fixation, at first in the recumbent position, and the only serious difference of opinion is found in discussions as to how this fixation should be brought about. Some surgeons, mostly in America, are in favour of permanent fixation by means of Allbee bone grafts; others in Europe and America rely on plaster-of-Paris supports during the period of recumbency, to be followed by spinal supports of various kinds after the erect position and perambulation are allowed. There is no question but that this conservative method, which leaves the patient with a spine flexible in the affected region, gives, if successful, better functional results than any fusion method which permanently stiffens the back.

Dr. George Riddoch, who opened the discussion on the neurological side, emphasized the importance in cases of cord lesions of delaying all operative intervention—if ever it be needed—until all symptoms of spinal shock had passed away, which might not be for two to six weeks after the injury. He confirmed the general belief, based on experience, that the pressure which damages the cord without destroying it is usually only exerted for a moment, and that any damage done is immediate and irreparable. Paralytic symptoms are very rarely due to remediable compression, and hence operations for the relief of nerve symptoms are very seldom to be undertaken with any hope of success. In the diagnosis of the nature and extent of the injury the x rays are of the first importance; without them many compression fractures would escape detection, and even with their aid it is in some cases very difficult to discover what is wrong. As Dr. Bertram Shires rightly insisted in the discussion, repeated exposures in different planes and stereoscopic pictures may be necessary before a decision can be come to. Such cases call for the highest skill and widest experience in the radiologist. Dr. Shires believes in the occurrence of subluxations of vertebrae which could be radiologically demonstrated and which, when undetected, might furnish opportunities for the triumph of irregular practitioners. Whether or not such cases are really slight subluxations or merely cases of adhesions is at present, we think, an open question. His reference to this problem of the non-detection of compression fractures opens another important question for discussion, which has recently been set forth by Dr. R. B. Osgood of Boston in an able paper read before the Section of Surgery of the American Medical Association last May.[1] After reviewing 242 cases of fracture of the spine he came to the conclusion that compression fractures are common injuries which are often not recognized early, and are consequently often treated by unsound methods, involving serious disability and medico-legal difficulties, and that if properly treated in uncomplicated cases a return to full wage-earning capacity may be expected. He has a peculiar personal interest in this matter, for he tells us that he himself suffered and recovered from a crush fracture of the sacrum; sustained whilst ski-ing. In his experience, in the vast majority of cases only one vertebral body is crushed, and in some three-fourths of the cases this body is that of the eleventh or twelfth thoracic or the first or second

[1] *Journal of the American Medical Association*, November 5th, 1927, pp. 1563-8

lumbar. It may be noted that in Dr. Osgood's series the incidence is much less in the cervical region than it is in the series of cases discussed by Mr. Jefferson or Mr. St. John Buxton, in which the cervical cases were nearly as numerous as those at the thoracic-lumbar junction.

Dr. Osgood strongly advocates conservative treatment such as we have outlined, and would let the decision to insert a bone graft rest with the patient and not the surgeon. His paper is well worth careful study by all surgeons interested in this question, and, in fact, no practitioner can be sure that he may not have to treat a spine damaged in a motor accident any day, and without warning.

NORMAL TERMINATION OF PREGNANCY.

THE factors that cause the termination of normal pregnancy have always been a subject of speculation, but knowledge regarding this important problem has advanced very slowly. Recently, however, certain definite facts have been established.

The work of Dixon, Marshall, and Knaus in establishing the influence of the pituitary gland on the uterine activity during pregnancy was reviewed in these pages a year ago.[1] Dixon and Marshall showed that ovarian extracts increased the pituitary secretion, but only when the extracts were made from ovaries which contained no corpora lutea, whilst Knaus showed that the effect on the uterus of administration of pituitary extract increased steadily towards the end of labour. The action of the drug on the uterus was measured by the ease with which abortion could be produced in rabbits.

The views expressed were not identical, for Knaus was led to conclude that changes in the contractile power of the uterine muscle constituted the chief factor that terminated pregnancy, whilst Dixon and Marshall's work suggested that changes in pituitary secretion, excited by the ovary, were the chief cause. Knaus[2] has now furnished additional evidence for his view. The method he employed was to sterilize one uterine horn in each of a series of rabbits, to kill the animals at various periods of pregnancy, to remove the sterilized horns, and to record their activity as isolated muscles. The presence of foetuses in the pregnant horns caused the muscle of the sterilized horns to undergo all the changes normal to pregnancy, but, as their form was not altered by the development of foetuses in their interior, their activity at different stages of pregnancy could be accurately compared. This ingenious method provided excellent records by means of which the changes of the activity of the uterine muscle could be determined very exactly. During the first half of pregnancy the uterine muscle showed a diminution in tonus, and the contractions were much feebler than those of the non-pregnant uterus. During the second half of pregnancy the spontaneous activity of the uterus increased steadily both in amplitude and frequency, and attained a maximum at parturition. These observations appear to indicate that parturition is the culminating event resulting from a gradual but steady increase in the excitability of the uterine muscle.

The reaction of the uterus to drugs also showed very interesting variations. Adrenaline and quinine caused powerful contractions at all stages of pregnancy; ergot and pituitary extract, on the other hand, had no effect during the first half of pregnancy, but produced strong contractions in the second half. The effects produced by pituitary extract in particular were much greater in the period immediately preceding parturition than earlier. If we accept Knaus's work we get a picture of an orderly change in uterine activity occurring throughout pregnancy, with parturition as the terminal event in the cycle. Parturition can thus be accounted for as a result of the changes actually occurring in the uterine muscle, which changes, it is suggested, are induced by some hormone set free by the foetus. The possibility that the pituitary gland also plays a part is, however, not excluded, since the sensitiveness of the uterus to pituitary extract is seen to change in such a remarkable manner as parturition approaches. This new work of Knaus therefore fits fairly well into the hypothesis, outlined by Dixon and Marshall, that one cause of the termination of pregnancy is a sudden increase in pituitary secretion excited by the ovary, in consequence of the regression of the corpora lutea.

[1] BRITISH MEDICAL JOURNAL, 1926, ii, 605.
[2] Knaus: *Arch. f. exp. Path. u. Pharm.*, 124, 152, 1927.

NOMENCLATURE OF DRUGS.

A CORRESPONDENT has sent us the following complaint. He read in an American article a strong recommendation of a drug called methenamine as a urinary antiseptic. Inquiries made by the dispensers of his hospital failed, however, at first to identify any drug of this name, and it was only after some trouble that our correspondent learned from America that methenamine was the title adopted by the tenth edition of the *United States Pharmacopoeia* for hexamine. This is a very typical example of the confusion that is bound to arise if more than one official name exists in the same language for a single drug. We know that similar confusion is constantly arising in regard to many other common drugs which have different titles in this country and in the United States. In this particular instance the actual history of the nomenclature of the drug is as follows. The substance hexamethylene tetramine became known to the medical profession under the proprietary title of urotropine. It was included in the *British Pharmacopoeia*, 1914, under the title hexamine, and in the *United States Pharmacopoeia* IX, 1916, with the name hexamethylenamine. Although these titles were not identical, yet they were sufficiently alike to prevent confusion, but unfortunately in 1926 the name was changed to methenamine in the *United States Pharmacopoeia* X. We understand that this change was made because it was felt to be desirable to shorten the name, and unfortunately proprietary rights were claimed in the United States of America over the name hexamine. Some similar reason will usually be found in most cases where a variegated official nomenclature for a single drug puzzles and annoys the practitioners of medicine. Such histories obviously indicate a very unsatisfactory state of affairs. Medical literature is international, and this is true in a special sense of all medical literature written in the same language. There is every advantage in having only one official name in the English language for any particular drug. One difficulty is that a large proportion of new drugs are introduced as proprietary articles, and it will usually be necessary for the medical profession to endure one change of name when such drugs are first introduced into the *Pharmacopoeia*. There is, however, no reason why more than one such change should be inflicted, and it is to be hoped that some international agreement will be obtained to ensure that when a name has once been introduced as an official pharmacopoeial name in either the United States or this country, it shall be free from capture as a proprietary name, and shall be adopted as the official name in both countries. The value to the medical profession of official names for drugs that have

been introduced under proprietary titles is that an official and non-proprietary name often reduces the price of a drug by throwing its manufacture open to competition, but if the official names do not succeed in establishing themselves in common use they fail to serve this purpose. Now the task of obtaining a satisfactory official name for any drug that has been established under a proprietary title is always likely to be difficult, because the most suitable and obvious names are just the ones which are most likely to be subject to proprietary rights. Moreover, the proprietary name usually has a long start of the official name. If in addition to these unavoidable handicaps the official names differ in different countries, it must often happen that the official names will be ignored and the proprietary names retained in use.

MECHANISM VERSUS VITALISM.

RATHER more than a year ago Professor Eugenio Rignano's *Man not a Machine* was reviewed in our columns, and now, to show the other side of the shield, Dr. Joseph Needham, of the Biochemical Laboratory of the University of Cambridge, has contributed to the same series of little volumes one with the title, recalling the eighteenth century controversialists, *Man A Machine. In Answer to a Romantical and Unscientific Treatise written by Sig. Eugenio Rignano and entitled "Man not a Machine."*[1] As if to prove that this plan of blast and counterblast has not originated with the publication of *Daedalus* and *Icarus* as a product of brighter biochemistry, Dr. Needham begins with an account of two somewhat similar books published 180 years ago—namely, "Man a Machine," written by Julien Offray de la Mettrie (1709-51), "a celebrated physician of the Faculty of Paris," and in the same year (1748) "Man More than a Machine," described as "in answer to a wicked and atheistical treatise written by M. de la Mettrie," by an anonymous person; de la Mettrie himself did not escape suspicion, for his methods bore a resemblance to his slightly senior contemporary Voltaire; he was, for example, guilty of a satirical lampoon purporting to describe the Medical Faculty of Peking, but actually ridiculing the leaders of the profession in Paris; he had to seek refuge in Berlin, where he became physician to Frederick the Great. Taking up the cudgels for de la Mettrie, whom the reader may at first be erroneously inclined to suspect he invented, Dr. Needham, with a light touch and very cleverly, contests the arguments of the vitalists, including one of the most recent, J. S. Haldane, and attacks Professor Rignano's argument that teleology, purposiveness, striving, aiming at a goal, is the unique characteristic of living matter. After a full and reasoned analysis of his opponent's thesis he draws together the threads of his essay in the concluding chapter, describing and discussing the methodological importance of mechanism in science and its inadequacy everywhere else.

THE ROCKEFELLER FOUNDATION.

THE report of the Rockefeller Foundation[2] for 1926 opens with a general review of the work by the President, G. E. Vincent, which was published separately and noticed in our columns on August 13th (p. 289). This is followed by the report of the secretary, Norma S. Thompson, which shows that the programmes of the Foundation were carried out during 1926 by two boards and two divisions—the International Health Board and the China Medical Board, the Division of Medical Education, and that of Studies. The International Health Board promotes public health and the prevention of disease by assisting Governments all over the world in the development of their own official health agencies. During the past year the Board took part in public health work of various kinds in eighty-eight States and countries throughout the world. It assisted Governments in yellow fever, hookworm, malaria, and general surveys; in campaigns for the control of yellow fever and hookworm disease; in demonstrations of malaria control; and in the development of public health organization in county and rural districts. Further, the Board has aided Governments in establishing or strengthening the technical services of public health work, such as sanitary engineering, the collection and interpretation of vital statistics, and public health laboratories. Numerous contributions were made to schools and institutes of hygiene for land, building, equipment, maintenance, or endowment; for the London School of Hygiene and Tropical Medicine alone a pledge of 2,330,000 dollars has been made. Study tours for Government health officials have been continued, and fellowships in public health were provided for 253 men and women of thirty-one countries. The Board continued to co-operate with the Health Section of the League of Nations by contributing funds towards the support of international interchanges of public health personnel and in other ways. The total expenditure incurred by the Board since July 1st, 1913, to the end of 1926 amounts to about four million pounds. Much of the report is devoted to hookworm disease, malaria, and yellow fever, three widely distributed diseases of economic importance which the Board has chosen for special attention. The account given of these three scourges illustrates the great importance of primary field inquiries into the local circumstances of communicable diseases in order to ensure that subsequent administrative measures shall be as effective and economical as possible. Thus, in the case of hookworm disease it was found in Alabama that a temperature of 50° F. and under checks larval developments in the soil. In Mexico and in India it was proved that, besides temperature, the rainfall was also an important factor. Again, field inquiries in Tennessee showed that the hookworm larvae flourish only in sandy or loamy soil, and do not survive in clay or silt soil. Hookworm disease is chiefly found among those who work upon the soil, such as farmers and gardeners, but the Board's workers in China made the interesting discovery that, while hookworm disease is rife among the mulberry-tree coolies, it is relatively unimportant among the coolies on the rice plantations. In both industries human excrement is used for fertilization; but whereas large amounts of fresh excrement are applied to promote a rapid growth of the mulberry leaves, in rice culture the excrement used is stored for some time and in consequence most of the hookworm ova are destroyed. Moreover, rice cultivation is carried on under water, and this again prevents the development of the eggs. In general, the distribution of the disease was found to correspond closely with the economic circumstances of the population; where the people can afford shoes for the children and provide suitable latrines the parasite gains no foothold. The campaign against this disease has resulted in its almost complete disappearance from the United States and increasing control of its spread elsewhere. Every person harbouring these worms does not suffer from them, for usually the amount of harm bears a direct relation to the number of worms; the Stoll dilution egg-count method, which demands a careful technique and is somewhat tedious, has been extremely useful in Madras in determining the intensity of the infection in various districts. Field investigations in malaria have thrown light on the species of mosquito conveying the parasite, and laboratory work has been devoted to the possible use of the precipitin reaction in the diagnosis of latent malaria and to suggested substitutes for quinine. An account is given

[1] *Man a Machine.* By Joseph Needham, Fellow of Caius College, Cambridge. Psyche Miniatures, General Series No. 12. London: Kegan Paul, Trench, Trubner and Co. 1927. (Pott 8vo, pp. 111. 2s. 6d. net.)

[2] *The Rockefeller Foundation: Annual Report for 1926.* New York: 61, Broadway. (Demy 8vo, pp. 460; 72 illustrations.)

of the West Africa Yellow Fever Commission, which started work in June, 1925; the disease is sporadic, but its endemicity among the natives has not been established. It appears from the report of the China Medical Board that in spite of civil wars and other disturbing events the work went on in 1926 without any serious interruption. This section of the report contains some particularly successful photographs and an imposing list of the papers published by the staff members of the Peking Union Medical College during the year under review. Dr. R. M. Pearce, director of the Division of Medical Education, shows that representatives of the Division visited twenty countries in connexion with medical education or co-operative programmes, and human biology and nursing education have been promoted by the Division of Studies. The reader cannot fail to be deeply impressed with the efficiency and widespread beneficence of this great Foundation.

THE OPPORTUNITIES OF SPA PRACTICE.

THE opportunities which spas present for collective research was the theme of the Samuel Hyde Memorial Lecture delivered by Dr. Whitridge Davies to the Balneological Section of the Royal Society of Medicine on December 8th. He suggested that hitherto, notwithstanding the keenness and up-to-date outlook of many spa practitioners, such clinical research as had taken place at spas had been less fruitful than might have been hoped for from the amount of time and energy spent thereon. The reason possibly was that in much so-called research too great attention had been paid to the results of a single method of investigation or the alleged results of a single therapeutic procedure applied to a number of cases. The more promising method of clinical research was to study by every possible means the etiological factors involved, the symptoms and manifestations, the functional changes, and the effects of various procedures in comparatively small groups of cases, and this required co-ordinated effort. The lecturer went on to describe the physiological "background" for the investigation of disorders of joints, and instanced some recent work on the nutrition of articular cartilage and the secretion of the normal synovial fluid, matters on which textbooks of physiology were silent. He mentioned also the work of A. V. Hill and others on reflex regulation of tonus and pathological physiology of muscles related to diseased joints. From this he passed to the physiological basis of various balneological procedures, the effects of local heat upon the circulation, and of general heat and immersion upon circulation and metabolism; and again, recent physical and chemical studies of various natural waters, radioactivity, "zymosthenic" and catalytic activity, and the chemical "architecture" of salts and other constituents of such waters. Here were large fields of research offering complex problems which spa practitioners could appropriately tackle. A medical man in a spa, said Dr. Davies, was fortunate as compared with many of his colleagues in industrial practice, who were often so overburdened with work that they had no time even to apply the knowledge they had gained as students, not to speak of acquiring and applying fresh knowledge. He had, as a rule, much more leisure; during a limited season he was extremely busy, but for the rest of the year he had ample time to take mental stock, to improve his technical skill, and to carry on research. In many health resorts the means for investigation and treatment were at hand, while the number of doctors gathered there, with many different interests and points of view, provided first-rate opportunities for combined research. The patients also, owing to the chronic nature of their maladies, or to their happier economic circumstances, were able to remain longer under observation. Spa hospitals had many empty beds during considerable periods of the year, and so were able to carry out work which was not open to the voluntary hospitals in large towns, where very few beds as a rule were available for any continuous investigation. But it was possible only by team work to take advantage of such opportunities as existed in spas. No one individual could hope to unravel more than a few threads of the tangle, but by working together much more could be done. The example of the Mackenzie Institute for Clinical Research might well be emulated by physicians in the principal health resorts. In one respect at least they would start with an advantage, for while Mackenzie and his co-workers had to lay the foundations before they could build, many spas already possessed facilities for such work as had been done at St. Andrews.

THE LOAD AND THE LAD.

THE latest report (No. 44) issued by the Industrial Fatigue Research Board is entitled "The physique of women in industry, a contribution towards the determination of the optimum load."[1] The painstaking investigations which are the subject of this report were due to a request from the Home Office. It is not clear, however, what evidence of serious damage to women in industry from carrying loads induced the Home Office to ask for an inquiry which has taken two years to complete, occupied the time of five experts, and led to the publication of a volume of 140 pages. Indeed, it would appear from the report that no such injury occurs, or at most that it is limited to some boys who, when able to choose their own load, occasionally attempt more than the expert deems suitable. Anthropometric data were first collected for 3,493 women engaged in industry, and, as a control, for 413 unemployed women and 460 college women. This part of the inquiry indicated that the college women were taller, heavier, and more powerful than the industrial women; that the strength-weight ratio was strikingly uniform for workers in good condition; and that there was some evidence of a relation between "heaviness" of the trade and the physique of the women employed in it. The second section of the report deals with the physiological cost of the various modes of carriage to the individual worker. Departure from the erect posture, abnormality of gait, much static effort, strain (especially on the smaller joints), led to a higher physiological cost. The investigators in this section decided that 50 lb. for "well disposed" loads and 40 lb. for "ill disposed" loads were the maxima for women engaged in continuous work. It is interesting to compare this decision with a statement on an earlier page that girls in brick works carried three or four large bricks, each weighing 26¾ lb., supported on the left hip, for a distance of seventy or eighty yards: "The good carriage of the girls in this factory was also very remarkable." The third part of the report reproduces observations made by Dr. Sybil Overton for the Chief Inspector and Senior Medical Inspector of Factories at the Home Office. This is, perhaps, the most illuminating part of the volume. She managed to discover two cases of alleged injury from weight lifting. A boy of 16 had a hydrocele which was said to have been caused by "strain at the works," and a woman aged 22 believed that heavy work during the war led to a femoral hernia. Two surgeons, on the other hand, informed Dr. Overton that "in their experience, so far as women and young persons were concerned, heavy work alone was not responsible for injury, and that some contributory factor was always present." As Dr. Overton says, "this opinion was largely borne out when accidents said to be caused by weight lifting were carefully investigated." It was found that the highest percentage of load occurred in industries in which the worker could select his own load to suit his personal convenience, and not in industries in which he could not exercise his volition. Dr. Overton is of the opinion that

[1] London: H.M. Stationery Office. 1927. 5s. net.

the work required of the woman and the young person is, on the whole, well within their capacity; that the strongest women gravitate towards the heaviest industry; that women are generally self-protective in their choice of the size of load. But the justification for her errand is, in Dr. Overton's opinion, the "young person." These individuals, especially the male young person (or, in homelier language, the lad), require "more regulation and supervision in their work if they are to avoid overstrain in the physically exacting period of adolescence." And the results of overstrain—when it occurs—are "the multiple sequelae of fatigue, increased incidence of accidents, lowered resistance to infection, increased suggestibility."

MYOPE CLASSES.

THE National Committee for the Prevention of Blindness, which has carried on an energetic and effective propaganda in the United States for the cure of diseases such as trachoma and the prevention of ophthalmia neonatorum, has recently turned its attention to the establishment of "sight-saving classes," the American term for our myope classes. Last year the committee sent to this country two of its members to investigate our methods first-hand. The report is a generous recognition of the work done in this country for the education of the short-sighted: "England is the Mecca to which every supervisor and teacher of sight-saving classes in America turns with longing eyes, hoping that an opportunity may offer to visit the country in which this specialized education originated, and to note its development." A brief account of the general system of elementary and secondary education is followed by a history of the origin of the myope classes first formed in 1908 at the instigation of Mr. Bishop Harman as "a step for helping lame dogs over stiles." The character of the children eligible for the classes, the training of the teachers, their salary schedules, varieties in classes in different places, the manner in which the difficulties of rural cases are met, the curriculum of the town classes, health regulations, classroom accommodation, and the actual teaching methods are all reported upon. It is noted that the size of classrooms varies, not only in different parts of the country, but in the schools of any one place, and the London classrooms are criticized on the ground that many are too small, giving little room for the children to move about. "In fact, the conditions are sometimes so crowded that there is not space for the children to change the position of their seats so as to get the best light, or to pass to other parts of the room for different types of work without seriously inconveniencing other children." The report contains accounts of visits to the ophthalmic hospital school at Swanley maintained by the Metropolitan Asylums Board, to Birmingham and Bradford, to the private residential myope school conducted by Mrs. Bridge at Piltdown, near Brighton, and to schools in Scotland. In summing up their impressions the delegates say: "In the myope school of Great Britain the visitor is impressed by the fact that the greatest emphasis is placed on the medical aspect. The medical inspection and follow-up work are most carefully and systematically done. The educational work for the most part appears somewhat subservient to the medical department. This is fitting and proper in many ways, as the main object for the existence of these classes as separate units is to save sight. . . . On the other hand, this plan has some drawbacks. . . . In most cases no attempt is made to keep abreast of the assignments of the regular schools. . . . Some children are able to return to the regular schools, and are then at a disadvantage. . . . Since competition is so keen in vocations, it is an added handicap to the pupils not to have the best education compatible with their eye difficulties." Then there follows this paragraph: "The myope schools are hampered by conditions over which they have no control. The lack of sufficient funds is a most serious drawback. The teachers deplore the fact that there is practically no opportunity for special training. Improved lighting, smaller classes, and books printed in proper size type are all necessary improvements, but all would add materially to the cost of conducting the classes. In spite of the lack of these things, the myope classes are justifying their existence." An appendix contains a reprint of an article by Mr. Bishop Harman which appeared in our columns (February 2nd, 1924, p. 203) and a useful bibliography.

ETHICAL COURSES FOR MEDICAL STUDENTS.

FOR many years the suggestion has been made at intervals that the medical student's education might usefully be rounded off with a lecture or lectures, given by an experienced general practitioner, on the proper conduct of practice. An experiment in this direction has now been made in London, and the November and December issues of the *St. Bartholomew's Hospital Journal* contain the text of a lecture on "Manners and customs in general practice," delivered at the hospital in October by Dr. L. G. Glover. The experiment was, no doubt, the outcome of an address which Dr. Glover gave to the Abernethian Society at St. Bartholomew's in 1926. It is interesting to compare the lecture with the syllabus, published last May in the *Journal of the American Medical Association*, of a course of six lectures which have been given during the past four years in the Washington University School of Medicine by the lecturer on professional conduct, Dr. Park J. White. Dr. Glover, in a simple and straightforward manner, trod the well worn path of English medical ethics, basing his discourse on the ancient rule in Augustinian monasteries for the master of the farmery, that "he ought to be gentle, good-tempered, kind, compassionate to the sick, and willing to gratify their needs with affectionate sympathy." If Dr. Glover laid almost unnecessary stress upon some of the rules of right conduct, this was as it should be in an address to hearers unacquainted with medical life. The American syllabus, on the other hand, though equally designed to keep the new practitioner in the narrow way of orthodoxy, is garnished with arresting subheadings. Thus, under the title "Acquiring practice properly" we find an item "Medical salesmanship." Advertising is dealt with as "legitimate" and "illegitimate," and practice may be improperly acquired by undue optimism or "alarmism." In the lecture on medical finance, after a description of the medical plight of the "genteel" middle classes, the student is instructed how to cope with patients "shopping" to learn size of fees for comparison with those of other doctors. For variety and topical interest, however, we are much impressed by lecture five, which embraces not only eugenics, euthanasia, and birth control, but also quacks and cults. A subheading of the last item concerns "near-quackish practices of the medical profession itself, such as unwarranted glandular, electric, and intravenous therapy employed for effect"—the words "for effect" meaning here, no doubt, "to impress." We are not sure whether it is wise to introduce the student to all the seven sins of medicine at once. Perhaps he will do better on the milder pabulum of Dr. Glover, which offers him a lofty ideal, and leaves him, fortified with this, to find out some of the more heinous wickednesses for himself.

THE PRINCE OF WALES presided on December 13th at the distribution meeting of the General Council of King Edward's Hospital Fund for London. It was announced that the sum for distribution was £281,500, including a special grant of £34,500 from the Wells estate for schemes of extension and improvement. Further particulars will appear in our next issue.

THE HEALTH ORGANIZATION OF THE LEAGUE OF NATIONS.

THE WORK OF THE CANCER COMMISSION, 1923 TO 1927.

WE have received from Dr. L. Rajchman, the Medical Director, the following summary of the work accomplished by the Health Organization of the League of Nations on some well determined cancer problems during the last four years. Before the Organization starts on the next phase of the same work it is thought that wider circles of the medical profession might well be informed of the results so far obtained.

This report[1] relates to a corner of the field of cancer study which has been under the observation of the Health Organization of the League of Nations for the past four years.

The Health Committee in 1923 decided that from the international point of view there might be advantage in looking into the official figures of mortality from cancer as a whole, and particularly of cancer of certain sites of the body, which have been furnished over a long series of years in certain European countries. England and Wales, Italy, and Holland were taken as specially suited for these comparisons, but auxiliary and confirmatory data from Switzerland and other nations in Europe, and for some purposes from America also, were laid under contribution. The investigation was made by a Commission of members of the Health Committee, with the assistance of statistical, clinical, and other experts, as well as of the Secretariat of the Health Section of the League. Its results promise to be of value both directly and indirectly. Directly, they relate chiefly to cancer of two sites, the breast and uterus, which were chosen because fatal cancer of these organs is less likely than cancer of other sites to pass undetected or to be inaccurately reported as the cause of death. The Commission find that even when they have limited their consideration to these sites, and deal solely with countries for which, over a long period of years, the national system of certification of causes of death has been well established and in many ways perfected, sources of error exist which seriously affect the proper comparison of the death rates as between one country and another, and even as between one part of the same country and another part. Much valuable knowledge can and should be obtained by the comparisons of cancer death rates, but the Commission has found that in every one of the countries of inquiry the certification of causes of death, in relation to cancer, is more or less unsatisfactory. There is, in particular, great uncertainty regarding the observance of the rule that cancer deaths should be referred in statistical statements to the primary site, and not to the secondary growths to which the final fatal result has ultimately been due. There is, in the Commission's opinion, "urgent need for investigation, in all countries possessing an organized service of statistics of causes of death, to determine exactly the degree to which certification by causes is unsatisfactory, and how its scientific value may be improved."

The Commission, with the aid of a distinguished anthropologist, Dr. E. Pittard, and an eminent statistician, Dr. Niceforo, made an effort to determine whether there was a relation, in Europe, between cancer mortality on the one side and race as judged by anthropometric characters on the other. The inquiry produced an invaluable monograph on the known facts regarding anthropological characters of different regions, but the anthropometric data, even more than the mortality data, proved to be too defective, and the Commission has sadly to record that its efforts show "how much must yet be done before attempts to appraise 'racial' elements in the prevalence of disease can be successfully undertaken." When a moment of consideration is given to the facile claims which have been made for individual nations and races that they are specially prone to, or specially exempt from, liability to cancer, this reasoned judgement, though negative in character, is not without practical value.

The direct results of the inquiry, however, have been by no means all of a negative kind. In each of the countries concerned national expert work was undertaken to ascertain the circumstances in which so many deaths from cancer, presumably preventable in large measure by early diagnosis and by early surgical (or radiological) intervention, were occurring. Special observations were made of sample series of cases of cancer of the breast and uterus at particular hospitals and in selected areas, as well as of the massed figures for the country as a whole. The results cannot fail to give a very considerable impulse and encouragement to the efforts which are being made in many quarters to organize a system of medical and hospital service, and of popular instruction, which will in fact prevent a large loss of life, and the occurrence of a still larger amount of avoidable individual suffering. In a matter of this kind a wide survey, obtained by putting together or contrasting the experience of several countries, differing in the type of their medical services, in their hospital facilities, and in the outlook of their people towards medical and surgical science, is invaluable. The notable conclusion is reached by the Commission that when all these national differences are allowed for, it is demonstrated everywhere that on the one hand early operation is a far more successful measure than even the general body of the profession suppose, and on the other, that in fact the frequency of resort to operation remains "deplorably low." This opinion, in one form or another, has often been expressed before, but the value of the Commission's conclusion on the point is its authority, derived from large and recent series of cases specially studied for the purpose and critically and judiciously analysed. It is well thus to be reminded that while we are waiting for new knowledge on the ultimate causation of cancer, or on specific remedies to cure cancer, we have already before us a sphere of immediate practicable action which, in respect of these sites of cancer at least, is capable of reducing death and suffering from cancer to a far lower level than at present obtains. From the point of view of education, the Commission's researches into the natural duration of untreated cancer, and into various antecedent conditions connected with cancer at these sites, furnish useful additions to medical knowledge. In regard to the influence of fertility they find, from the experience of all the countries, that a fertility below the normal for the particular nation is associated with increased liability to cancer of the breast, while cancer of the uterus is to be associated not so much with fertility itself or with the number of pregnancies, but specially with the occurrence of a first pregnancy. The Commission lays stress on the evidence that cancer of the cervix is connected with conditions of labour, particularly in primiparae, which are in some measure preventable by the efficient management of the labour.

Indirectly the investigations of the Commission have been found valuable in each country in which they were pursued by helping to open up a comparatively new line of cancer research which may be called "field work" or "team work." The questions at issue have required that in each country clinicians, surgeons, health administrators, and statisticians should be brought together for consultation and to arrange for the suitable selection of cases, the determination of after-histories of operation cases, and the assessment of results. This co-operation has in some cases been central, and related to the country as a whole, in other cases local, in connection with a particular communal area or a particular hospital. But in every case it has been fruitful, and the Commission urges that the organization of group studies of this kind should be extended to other countries, and applied to all sites and varieties of cancer. On the completion of the studies now reported, the Commission has undertaken the further duty of collecting and analysing, for the consideration of the Health Committee of the League, different suggestions for applying the special opportunities of international scientific collaboration which the Health Organization at Geneva can furnish to the elucidation of other specified purposes of cancer research or for the prevention of cancer mortality. That the Health Organization of the League should compete with or overlap the mass of cancer investigation, national and international, already proceeding in every civilized country in the world would be an indefensible proposition, but the inquiries summarized in the present report demonstrate that by the wise selection of appropriate matters for international inquiry the cancer studies made in individual countries or by individual investigators can be materially helped by this organization.

[1] League of Nations Publication, III, Health, 1927, iii, 17.

UNDULANT FEVER.

AN APPEAL FOR THE DISCONTINUANCE OF GEOGRAPHICAL DESIGNATIONS.

THE unfortunate designation "Malta fever" has long caused annoyance to the inhabitants of the island. Although at the International Congress of Medicine in London in 1913 a resolution was adopted by the Section of Tropical Medicine and Hygiene substituting for it the descriptive term "undulant fever" (JOURNAL, 1913, ii, p. 429), this improvement has been neglected, particularly by American and Continental authors, though it has been accepted by most British writers. The Malta Branch of the British Medical Association, in conjunction with the Camera Medica (Maltese Medical Association) has, therefore, issued the memorandum printed below appealing for the general use of the designation "undulant fever," and also of the term "*Micrococcus brucei*" instead of *M. melitensis*. The latter change is not discussed in this memorandum, in view of the proposal to hold an International Botanical Congress in 1930, when the general question of bacteriological nomenclature will be considered.

Memorandum by the Malta Branch of the British Medical Association and the Camera Medica of Malta.

1. A suitable and generally acceptable designation of this fever has long been the subject of discussion. The disease is one of those that have been labelled with a multitude of names: thirteen appellations have been given to it on account of its supposed resemblance to typhoid or malaria; the character of its fever and the symptoms it presents gave rise to fourteen other designations, and nine more were derived from the conditions which from time to time were considered to favour its prevalence. From the localities in which it was recognized and studied it came to be called Mediterranean fever, Malta fever, Italian fever, Neapolitan fever, Rock or Gibraltar fever, Cyprus fever, Crimean fever, etc.

2. The name "undulant fever," originally proposed by Captain M. L. Hughes, Army Medical Staff, in 1897, was recommended by the International Congress of Medicine held in London in 1913, and is the one generally used by English writers. The terms "Malta" or "Mediterranean fever," however, are still frequently met with, and the purpose of this communication is to point out the objections to the use of these appellations, and to make an earnest appeal to all medical and scientific writers to discard them in favour of the more proper and less controversial one—undulant fever.

3. The term "undulant fever," though not perfect, is the most suitable designation of this disease in the present circumstances. As Hughes had pointed out, it describes one of the most constant and characteristic features of the disease—namely, the undulations of the temperature curve. The temperature constitutes the primary, in many cases the only, clinical manifestation of the illness, and although the curve may not always be of the "undulant" type, yet the phenomenon is sufficiently frequent and typical to justify the adoption of the word "undulant" as a term which would clearly convey to any person the principal clinical feature of the disease. Parallel cases are the designation "typhoid fever," in general use for the disease in which the "typhoid" state is a frequent and salient but not constant symptom, and even more so the term "relapsing fever," derived solely from the variations of the temperature.

4. The term "undulant" has so far been used only for this disease; it cannot therefore give rise to ambiguity, and does not offer the same drawbacks as the terms "remittent" and "intermittent." Hughes had also rightly claimed that it "has a familiar sound, slips easily and lightly from the tongue, and is easily translatable into any language from the Latin form of *febris undulans*." Its use has been accepted by many authorities whose attention has been called to the matter, and is continually gaining favour with scientific writers. It appears, in fact, to have stood the test of time, and once that, excepting the objectionable geographical names, no other term has been more frequently used as a designation of this disease, the coining of a new name does not appear to be opportune at present.

5. It is agreed that geographical names given to specific diseases are undesirable from a scientific point of view. They are mainly relics of the times when the miasmatic theory of disease held sway and each kind of fever was considered to be caused by "infective emanations" inherent to the particular country or locality where it prevailed. They have no relation whatever to the symptomatology of a disease, or to any of its primary or secondary features, and are neither characteristic nor significant of its nature. As Sir William Aitken said when advocating the use of a general nomenclature of diseases: "Except as matters of history and as beacons to warn us from a greater danger to science, let these and such like names be consigned to oblivion." And, as a matter of fact, the disease which forms the subject of this communication appears to be one of the very few for which a geographical name is still in use.

6. A consideration of the history of fevers for the last 150 years brings home very clearly the part which the use of geographical names played in helping to retard progress in the unravelling of the nosology and etiology of diseases. This is specially evident in connexion with the "Mediterranean" group of fevers. Under such names were frequently grouped together indiscriminately such diverse diseases as typhus and typhoid, yellow fever, another fever accompanied by jaundice of doubtful nature, sandfly fever, relapsing fever, and probably malaria cases and other feverish diseases which are still unclassified.

7. The name "Malta fever" was eventually assigned to the long-continued fever of the undulant type comparatively recently. Formerly by "Malta fever" or "Maltese fever" was understood the "simple ardent fever" of short duration now known as phlebotomus fever. Marston, who was the first to give a detailed description of undulant fever in Malta (Army Medical Report, 1863), called the disease "Mediterranean or gastric remittent fever," and clearly differentiated it from "simple ardent fever," which he continued to call "Maltese fever." Boileau (1866) described "Malta fever" as "a pyrexia with sudden onset terminated in seven days by lysis." Later on the term came to be applied also to fevers of longer duration (Maclean, Wood, Notter, 1876). It is evident, therefore, that the designation "Malta fever" cannot be retained for the fever of the undulant type on the plea of length or priority in use.

8. The fact that undulant fever is not confined to the island of Malta or to the Mediterranean needs hardly to be emphasized. It has been identified in other European regions and in widely separated localities in China and America, South Africa and India, etc. Nor, it may be mentioned, is it peculiar to the Maltese goats.

9. Recent observations that the *B. abortus* of Bang may give rise to a continued fever of the undulant type similar clinically to that caused by the *M. melitensis* of Bruce would furnish a further argument against the retention of the term "Malta fever." Whatever connexion there may be between the designations "Malta fever" and "*M. melitensis*," it does not hold good when the fever is due to the *B. abortus*. The adoption of the term "undulant fever" for the clinical condition, followed in each case by an indication of the causative agent—for example, undulant fever (Bruce), undulant fever (Bang)—should prove useful, as in the case of the paratyphoids.

10. The prejudice to the moral and material interests of the island of Malta in consequence of the association of its name with a disease which is far from being peculiar or limited to the locality is considerable. The Maltese nation keenly resent the resulting stigma, and feel that the reputation of their country has suffered mainly on account of the important research work on the disease that has been carried out in the island. The Government of Malta, in fact, has on several occasions considered it necessary to make representations on the subject.

11. The members of the "Camera Medica" of Malta and of the Malta Branch of the British Medical Association have ventured to submit the above observations in the hope that their fellow members of the medical and allied professions will take their request into sympathetic consideration, and that they will accept their suggestion for the general adoption of the designation "undulant fever," and for definitely discarding the inappropriate geographical names.

A. V. BERNARD,
President,

P. P. DEBONO,
Honorary Secretary,
Malta Branch, British Medical Association.

G. DEBONO,
President,

G. HYZLER,
Honorary Secretary,
Camera Medica, Malta.

Valletta, Malta, November, 1927.

HEALTH OF THE SCHOOL CHILD.

SIR GEORGE NEWMAN'S REPORT.

(*Continued from page 1107.*)

ONE of the most notable expansions of the school medical service in England and Wales during the past year has been in the development of schemes for the treatment of crippling defects. New schemes were approved in forty-seven areas, bringing the total number of such schemes up to 132. Orthopaedic treatment in connexion therewith is carried out in 59 hospitals (and in 20 of these the education of the patient is provided for), in 122 school clinics, and over 100 voluntary clinics. The ultimate success of any scheme in effecting the cure of crippling conditions must depend upon the early discovery and treatment of these conditions, the majority of which arise in pre-school life. Especially is this true of infantile paralysis, which is responsible for a large proportion of all cases of crippling. There is evidence of definite progress in the prevention of crippling defects. Tuberculous bone disease, one of the chief causes of crippling, shows a decline. Severe rickets, another important cause, has been diminishing for several years, owing to knowledge as to its prevention. A complete local scheme can only succeed when there is (1) knowledge of the cripples of the area; (2) provision for remedial facilities; (3) following up of all cases; and (4) measures for prevention. Provision must be made also for training and rehabilitation of the cripple and for a full range of suitable occupations, so that each individual may be put to the most suitable employment.

Treatment by Artificial Light.

Artificial light as a method of treatment for various defects and diseases has achieved great popularity during the past few years. It is a form of treatment which appeals vividly to the imagination, but experience shows that both skill and caution are required in its administration. The following notes are founded on the reports of school doctors: Dr. Hill of Carshalton is of opinion that the treatment has no actual influence on the rate of gain of weight. Dr. Saunders, tuberculosis officer of Croydon, notes that "the very debilitated, anaemic, chronically delicate child appears to react adversely to the treatment. In cases of extreme debility the tissues do not appear to be able to respond, and the net result is a further drain upon the vitality of the child. This manifests itself in loss of weight, increasing listlessness, and nervousness." In catarrhal conditions it was found that there was no diminution of the symptoms as a result of treatment. Rickets did not show any better response to light than it did to cod-liver oil. In the treatment of surgical tuberculosis, on the other hand, light has proved of great value. Children suffering from tuberculous glands do well; the effect is most manifest in those cases with discharging sinuses. The most successful results have been obtained in the treatment of lupus. Pronounced successes are reported in the treatment of psoriasis, impetigo, and alopecia areata. There is very little evidence of any benefits obtained in the treatment of nervous conditions. Certain children become ill and irritable. Generally children become more cheerful, but where strict investigation has been made, as at Carshalton, it has not been found that artificial light has any lasting influence on either mentality or character.

The Child before School Age.

Last year suggestions were made that the state of entrants should be the subject of special investigation. It is now clear that one-quarter to one-third of the children need medical attention immediately on admission to school. The defects found are constitutional. Not a mere defect just to be put right, but some degenerative process—in part hereditary, in part due to some lack of home nurture such as irregular feeding and lack of sleep, in part due to infective fevers. In some areas there is an indication that conditions are better now than formerly, but London shows no change for ten years. A fault in methods is the fact that the child from birth to 5 years of age is under the maternity and child welfare authority, and thereafter the educational authority, and the two are separate. "There is no continuous supervision by the same authority." In a few cities, such as Liverpool, there is continuity, for the authority is one and the same. There is evidence of a great need for more effective welfare service—something in the nature of an institution which combines the advantages of the day nursery with those of the nursery school. The nursery school seeks to remedy the defects often inherent in the conditions of home life as found in some parts; it aims at medical and social education and the provision of right environment, physical, mental, and social, for the proper development of very young children. Experience shows that fears lest the removal of such children from the home should result in lessened parental responsibility have little foundation; on the contrary, increased parental interest and co-operation for the welfare of the child is obtained. This is shown in improved cleanliness and nurture, both personal and domestic, a wiser dietary, and in many cases more suitable clothing. Such schools should be closely associated with the school medical service, for the congregating of large numbers of young children of susceptible age demands the attention and supervision of medical officers, nurses, and teachers skilled to detect early symptoms of disease and ready to take prompt preventive measures against infection. In many areas where mothers go out to work day nurseries are inevitable; but it is suggested that it would be better to have one type of nursery for all children under the school age in areas where the social condition makes such a provision necessary for the protection of child life. Such an institution might be established at or in connexion with the maternity and child welfare centre and near the local elementary school. Such a system would give the infant the advantages of habit training and medical supervision at the critical time, and would relieve the school medical service of much of the disease which has to be faced when the entrants come under examination.

Acute Rheumatism.

The hypothesis that acute rheumatism is the reaction of the human body to the presence of the *Streptococcus viridans* is mentioned with favour. It is noted that this organism is widely distributed, is frequently found as a harmless saprophyte, or as the causal agent in lesions which have nothing to do with rheumatic fever. If it be, as believed, a common, perhaps constant, habitant of the human body, attention must be concentrated on the conditions and predispositions which induce it to assume an activity which results in rheumatic fever. The organism cannot be annihilated; we must discover the means of fortifying the body against it. It is advised that the school doctor should search for any case in which there is suspicion of acute rheumatism; a register should be kept and these children watched, their work and attendance being modified. Facilities for consultation at a heart centre are recommended, with some hospital beds available, and residential hospital schools for lengthy cases; and finally, continuous after-care. A detailed account of a scheme developed by an association for the prevention and relief of heart disease, organized in New York in 1915, is given. The completeness of the scheme depends on the close and willing co-operation between the officers of the school and public health services, the private practitioners, and the staffs of voluntary hospitals, and the co-ordination of these by one man, of acknowledged skill and consultant standing, on the staff of the hospital and acting as expert adviser to the school medical officer.

Health Teaching in Schools.

The teaching of hygiene is unequal and variable in form; the form itself is dependent upon the circumstances of the school. A competent and well informed teacher, well supported by the local authority, will ensure an effective presentation of the subject. There are, however, many difficulties to be overcome. In some places the school premises and equipment do not provide a very favourable environment for health demonstration purposes, rather the reverse; in many schools the teacher has not yet devoted himself to a thorough understanding of hygiene and a wise exposition and interpretation of it; in many others the responsible authorities have let hygiene be crowded out of

the curriculum, failing to understand its value. It is suggested that for children under 11 years of age there should be a periodical and, if practicable, a daily lesson in health of a few minutes' duration. It should be directed to healthy habits, with illustration of, and the requirement of, clean hands, clean hair, clean teeth, until cleanliness becomes a habit. The child should become accustomed to fresh air in the classroom, be taught to breathe with mouth shut, trained to sit squarely, and to use sanitary conveniences decently. For older children the lessons might be associated with the teaching of elementary science (chemistry, physics, and biology). It should be less a school subject than an integral part of the whole life of the school. The Board of Education is publishing forthwith a special handbook of suggestions to teachers on the teaching of hygiene.

Investigation and Research.

That the school medical officers are keenly interested in the increase of medical knowledge is shown by the list of individual investigations undertaken by them. Besides, there have been collective investigations on certain subjects. There are committees at the head office for co-ordinating these particular investigations. One on enlarged tonsils and adenoids, another inquiring into defective vision, an anthropometric committee, a committee on mental deficiency, and on the physical condition of "entrants."

In his conclusion Sir George Newman remarks that this year's report makes the nineteenth issued since 1908. The series constitutes a sort of Domesday Book of the physical condition of the English child for that period. It is only by the careful study of the actual facts over a period of time that we can appreciate the influences and conditions which affect not only the child's school days, but the whole life of the individual. Education, occupation, production, capacity, even character, are dependent upon physique. That is, and must remain, the bedrock. If it fail us all else will be imperilled. We may design admirable schemes of education in literature, science, and the arts and crafts, and reform and adjust them from time to time, but if the pupil does not possess a healthy and well balanced body, unimpaired special senses, a "thinking hand," and an alert and developing brain, we labour in vain, and our schemes may come to naught.

Correction.—There was a printer's error in the notice of Sir George Newman's annual report to the Board of Education published in last week's issue of the JOURNAL at p. 1106. In the small print under the heading "Nutrition" (column 2) he is quoted as saying "Insufficient sleep, chronic fatigue, absence of fresh air, and lack of exercise are exerting a very good influence," etc. The word "good," so obviously incorrect, should have been "great."

Scotland.

DR. C. E. DOUGLAS.

A LARGE company from the town of Cupar and county of Fife assembled in the County Hall, Cupar, on December 8th, when a testimonial was presented to Dr. C. E. Douglas on the occasion of his retirement after fifty years of active medical practice in the town of Cupar. Provost H. J. Smith presided, and the presentation was made to Dr. Douglas by Sir Ralph Anstruther, Lord Lieutenant of the county. He said that Dr. Douglas was not only greatly esteemed as a medical man, but he had played a large part in the social life of the community. He had been a great worker in the Volunteer Force and afterwards in the Territorial Army, while during the war he had set a fine example in the public service by his work in the Royal Army Medical Corps abroad. Dr. Douglas, in reply, said that he had all his life suffered from a disability of looking younger than he really was. He considered that during his fifty years of medical experience the greatest advance had been the rise of preventive medicine. He believed that the present practice of taking children once or twice a year to be examined by a doctor was not sufficient, and every man and woman over the age of fifty should be periodically examined in a similar manner, no matter what was their state of health. In this way many ailments could be checked at an early stage. It may be recalled that Dr. Douglas graduated at Edinburgh in 1877 and afterwards took the M.D. degree of that university, the F.R.C.S.Ed. in 1898, and the D.P.H. of Cambridge in 1894. He served as a temporary surgeon with the South African Field Force, when he was made an honorary captain in the R.A.M.C. and during the great war he acted as a lieutenant-colonel in the R.A.M.C. with the Expeditionary Force. He has been a prominent member of the British Medical Association, in which he has held many offices, including those of chairman of the Scottish Committee and a member of Council of the Association. He received the honorary degree of LL.D. from his university last July, during the Annual Meeting at Edinburgh. In his retirement Dr. Douglas has taken up residence in St. Andrews.

FUTURE OF SCOTTISH HOSPITALS.

The Government's hospital policy and the future relations of the public authorities to voluntary hospitals were discussed on December 9th at a meeting between Sir John Gilmour, Secretary of State for Scotland, and a deputation from the Scottish voluntary hospitals. The meeting took place in the offices of the Scottish Board of Health at Edinburgh, and the deputation was introduced by Colonel J. A. Roxburgh, chairman of the Scottish Regional Committee of the British Hospitals Association and chairman of the Glasgow Western Infirmary. The deputation was representative of voluntary hospitals in Edinburgh, Glasgow, Aberdeen, Dundee, Falkirk, Stirling, Paisley, Dumfries, Inverness, Greenock, Dunfermline, and Perth. Colonel Roxburgh explained the object of the deputation, which was a desire to put six questions to the Government in regard to co-operation between public authorities and the voluntary hospitals. The hospital position in England and that in Scotland were different. In Scotland there was an estimated shortage of some 3,600 beds, and the voluntary hospitals were in favour of co-operation with the public authorities, but felt it necessary, specially in view of the proposals for Poor Law reform, to obtain a lead from the Government on the methods of co-operation likely to be adopted. The questions were as follows:

1. Is it proposed to establish a unified hospital service in Scotland?
2. If the answer is in the affirmative, would the statutory hospital service cover the whole field of medicine, and would it work in competition with the voluntary hospitals?
3. Who is to provide the necessary additional beds after the present building programmes of the voluntary hospitals are completed?
4. Will the voluntary hospitals and the public authorities work in co-operation round the voluntary hospitals as centres?
5. Is it proposed to give financial aid to the voluntary hospitals as recommended by the Mackenzie Committee?
6. Is there any need to establish a statutory general hospital service?

Sir John Gilmour, in reply, said that he was glad to have the opportunity to discuss a question of such vast importance to the country. He thought that the problem might be varied in different parts of the country, and it was perhaps not possible to lay down a common policy. With regard to the future of the Poor Law system, he thought it was safe to say that in any scheme it would be necessary to have larger units. He assured the voluntary hospitals that they had no reason to apprehend that anything inimical to them would result from Government action. He and the Minister of Health agreed that the Government's object must be to conserve the voluntary system, for the voluntary hospitals had maintained and improved their position, and Scotland especially had reason to be proud of the position of those hospitals. Taxpayers and ratepayers had enough difficulties at present without facing the burden of cost of the whole hospital services. He could not, however, commit the Government on the subject of a proposed grant, but he looked to co-operation between the public authorities and voluntary hospitals for the future development of hospital services. He agreed with the view that the co-operative arrangements should centre round the voluntary hospitals. Some advance on co-operative lines had already been made—for example, at Stirling, Falkirk, Aberdeen, and Glasgow. As part of the solution of the increasing demand for hospital services he thought that the Poor Law hospitals must be brought up to the standard of the voluntary hospitals. He suggested

that the voluntary hospitals might appoint a small committee of three or five persons to act as a link between the Regional Committee and the Department.

A general discussion thereafter took place, in which several of the speakers endorsed the proposal to extend the system of paying patients in the general hospitals. It was also suggested that a Government grant for capital expenditure would probably solve the difficulty so far as Glasgow was concerned. At the close of the meeting a liaison committee, as suggested by the Secretary of State, was appointed as follows: Colonel D. J. Macintosh and Dr. MacFarlane from Glasgow, Sir David Wallace from Edinburgh, Mr. C. F. Henderson from Dundee, Mr. Thomson from Stirling, while a member still remained to be nominated from Aberdeen.

Presentation to Dr. Murray, Inverness.

A complimentary dinner of practitioners in the counties of Inverness, Ross, and the neighbouring areas was held on December 3rd to celebrate the jubilee in medical practice of Dr. James Murray. Dr. John W. Mackenzie, Inverness, presided, and the health of the guest of the evening was proposed by Dr. John Macdonald, M.O.H. for Inverness town and county. He said that the credit of introducing antiseptic principles in surgical treatment in the North of Scotland belonged to Dr. Murray, who had been a pupil of Lister at Edinburgh University, where he had graduated in 1876. In returning thanks Dr. Murray said that his period as a student had been a very interesting time when the discoveries of Pasteur and Lister were revolutionizing the practice of medicine and surgery. He had been a prizeman in the class of Lord Lister, and had later acted as house-surgeon in Edinburgh Royal Infirmary under Sir Patrick Heron Watson. The students of that time had been impressed with the wonderful success of surgical cases obtained in Lister's wards as compared with the greater tendency to sepsis in other wards of the institution. He mentioned that the poet Henley had been a patient in Lister's ward at the time in Edinburgh Infirmary.

Ireland.

Retirement of Professor Pearson of Cork.

Having reached the statutory age, Professor C. Y. Pearson has retired from the chair of surgery at University College, Cork. On November 19th Professor Pearson gave a valedictory address to his students in the examination hall of the college. Many of his old pupils from the city and county were also present, together with his colleagues on the teaching staff of the college. He reviewed his long connexion with the college as a teacher, starting as demonstrator of anatomy, then for many years as professor of materia medica and lecturer in medical jurisprudence, and finally, since 1900, as professor of surgery. Originally a graduate of Queen's University of Ireland, he saw that institution replaced by the Royal University and the latter by the National University of Ireland. As a mark of their appreciation of Professor Pearson's services to the teaching of medical science his colleagues are anxious to perpetuate his name in the college by founding a "Pearson" prize or medal to be awarded at the final M.B. examination. A committee has been formed, and invites the co-operation of Professor Pearson's old pupils at home and abroad. Subscriptions, limited to one guinea, may be sent to Dr. W. J. O'Donovan, Pathology Department, University College, Cork.

Samaritan Hospital, Belfast.

The extension of the Samaritan Hospital, Belfast, is now making good progress, and on December 5th Viscountess Craigavon, accompanied by her husband, the Prime Minister of Northern Ireland, laid a commemorative stone. The new building will double the accommodation of the institution. Two large new wards will be available on the ground floor, and the additional accommodation will enable the hospital to extend its sphere of usefulness. Sir Thomas Dixon, who presided, in proposing a vote of thanks to Lady Craigavon, recalled that the hospital was founded in 1872 by Dr. M'Mordie in College Street. After a year or two the premises were found too small, but, thanks to the generosity of Mr. Edward Benn, the hospital was able to remove to its present site. In 1897 the accommodation was found unequal to the growing requirements, and the late Mr. Forster Green added a wing at his own expense. Later it again became evident that the hospital premises were not large enough, and Lady Craigavon issued an appeal and organized a very successful bazaar, with the result that the committee was in a position to build the present extension. Lady Craigavon, in replying, said that a magnificent response to the appeal had been made in the six counties, and she was sure that the contributors would feel that they had in the Samaritan Hospital an institution worthy of the city of Belfast. Though the response had been generous it was still necessary for the maintenance of the hospital that the subscription list should continue to grow, and she urged that the public, in going through their charity lists at the beginning of the year, should bear in mind the needs of this excellent institution.

Vaccination in Wexford.

In the Dail recently Mr. Michael Jordan asked the Minister for Local Government and Public Health whether he had issued to the County Wexford Board of Health a threat of mandamus because of their failure to enforce the vaccination laws; whether he was aware that the vaccination laws had been in abeyance in that county for the last twenty years, and that an attempt to enforce them now would involve the ratepayers in very heavy expense for legal proceedings; and whether he was prepared to introduce legislation for the purpose of amending the vaccination laws to exempt conscientious objectors. General R. Mulcahy, Minister for Local Government and Public Health, in the subsequent debate said that he could not hold out any hope to the County Board of Health in Wexford that he would not do everything possible to enforce the vaccination laws there and in every other county in the Saorstat. He did not know what Deputy Cornish meant by saying that if attention was paid to sanitation they need have no fear of small-pox. He did not agree that the vaccination laws had been in abeyance in Wexford for twenty years, though there had been a certain amount of agitation against vaccination there for some time past. The medical officer received 2s. for every vaccination case, and whenever a notice had to be served on a person who had not arranged for his child to be vaccinated during the statutory period it cost 1s.; legal expenses were, however, another matter. In January, 1925, the urban district council had taken over the administration of vaccination from the board of guardians of New Ross, which had a population of 5,009, the average yearly number of births being 112. Since 1925 the Board of Public Health had endeavoured to administer the vaccination laws there, and 708 successful primary vaccinations had been performed. There had been some legal expenses in the case of 38 defaulters prosecuted recently. The total legal expenses in connexion with vaccination since January, 1925, including the 38 defaulters in New Ross, were £21 14s. 7d., so that the cost of having the vaccination laws put into force properly in Wexford was not going to be excessive. If it was clearly shown that there was a present danger because of the position with regard to small-pox, there was no reason to believe that the Wexford people would not be as sensible as any other people in the country. While the point had been raised that adults were unprotected by their first vaccination and were liable to contract small-pox, it was known that childhood was a dangerous period. It was worth noting in connexion with the present outbreak in England and Wales that in 1926 there were 10,141 cases of small-pox. An analysis of the figures showed that complete immunity against the disease was conferred by vaccination under the age of 12 years, and that no infants or young children who had been vaccinated were attacked by small-pox. Indeed, such was the efficacy of infantile vaccination that only eight children who had been successfully vaccinated contracted the disease under the age of 15 years, whereas amongst the unvaccinated children of the same age period

the disease developed in 4,840, with fatal results in seven cases. If they were not prepared to follow France and Germany in having adult vaccination at a particular period, they could be assured that infantile vaccination would protect the children of the country up to the age of 12 almost completely against the danger of small-pox. The cost of a small-pox epidemic was very heavy, for in addition to the charges for vaccination, there were expenses for medical fees, special nurses, and destruction of clothing of cases and contacts. The person attacked was laid up for three to twelve weeks, and the contact case was isolated for twelve to twenty-three days. It would be rash to assume that there would be no outbreak simply because they had had only eleven cases. Within the last two years a serious situation had arisen in England, and owing to the way in which small-pox was carried they might very possibly find a number of cases springing up in their midst in persons who had come from England, the disease only developing in Ireland. If it was thought that there was no sound medical basis to their present vaccination laws the position ought to be stated from the medical point of view.

In an interview given to the press a few days later Dr. E. F. Stephenson, chief medical officer of the department, declared that Wexford was a danger to the community. For twenty years the vaccination laws had been in abeyance in the county, and the ratepayers had protested against the present attempt to enforce them, on the ground of expense. If a person infected with small-pox came there, he added, the disease would spread widely, and the expense could be imagined when it was considered that the isolation and treatment of a single case at Cobh, co. Cork, cost £183. Living, as they were, with their ports in constant communication with Great Britain, they must certainly regard seriously the presence of the extensive and dangerous outbreak of small-pox in that country, and they would be neglecting very serious duties if they did not point out the danger, or left anything undone to secure that the vaccination laws were administered to the greatest possible extent.

England and Wales.

MEDICINE AND LAW AT DINNER.

THE annual dinner of the Medico-Legal Society was held at the Holborn Restaurant on December 9th under the presidency of Sir William Willcox, when the principal guest was Mr. Justice McCardie. The usual toast of "Medicine and Law" was proposed in a few sentences by Earl Russell, and responded to by Lieut.-Colonel C. T. Samman (Warden of the Society of Apothecaries), and by Sir Leonard Kershaw (Registrar of the Court of Criminal Appeal). Mr. Justice McCardie, in proposing the toast of "The Medico-Legal Society," reminded the gathering that the society was founded twenty-six years ago. How the wise physicians and lawyers of past times would have rejoiced over such a union of their professions! It would be deplorable should anything arise to cause antagonism between medicine and law. The two professions had much in common, especially in the fact that they both jealously preserved their traditions. Mr. Justice McCardie avowed himself a great lover of the law, conceiving it as an edifice beneath which all citizens might take shelter, and he looked upon medicine also with deep respect, recalling the remark of an old writer, "When I read the history of disorders I wonder that men can live, but when I read the history of cures I wonder that men can die." There were two things which might lead to antagonism between the professions. One of these was the question of insanity and crime. He did not believe that the law was unprogressive, or that the social and scientific philosophy of 1927 must necessarily be the same as that of 1843; but he thought this question ought to be placed on a wider basis than that on which it was commonly taken. In newspaper and other discussions on the subject insanity in its bearings upon crime was always treated from the aspect of murder, whereas, in fact, it ought to be considered in relation to very many lesser crimes. The other question was medical secrecy—a vital question to the medical profession, as he himself had reason to know. But again he pleaded for a broader view. The medical man was naturally eager to break down the legal obstacles in the interests of public or individual health, and he respected his point of view, but the lawyer also had his ideal, which was the elucidation of truth, the very root of criminal justice. "Justice," said Daniel Webster, "is the great interest of man." He knew of no other test to apply to both these questions than the test of utility, the Benthamite test—the greatest good of the greatest number—and if that test were applied it would be found that the problems were by no means capable of the simple solution which was taken for granted in some quarters. Sir William Willcox paid a tribute to his predecessor, Lord Justice Atkin, who had been president of the society for seven years. The great advantage of the society was that every new development bearing on medico-legal science was discussed from the double aspect. The past few years had seen not only an increase in membership, but a fresh stimulus to discussions. He hoped to see medico-legal work much better co-ordinated, if possible by the establishment of some institute in London, where teaching and research in forensic medicine could be advanced. Dr. F. G. Crookshank, in a witty speech, proposed the health of "The Guests," and Sir John Anderson, Permanent Under-Secretary to the Home Office, and Mr. Herbert Carson, president of the Medical Society of London, made brief responses.

BRISTOL MEDICAL SCHOOL DINNER.

The annual dinner of the Bristol Medical School was held on December 8th at the Berkeley Café, Bristol, under the presidency of Professor J. A. Nixon, C.M.G., the guest of the evening being Colonel T. Sinclair, C.B., M.P., emeritus professor of surgery in the University of Belfast. The President, proposing the toast of "The Guest of the Evening," said that Professor Sinclair was the first member of Parliament to be welcomed by them as an honoured visitor. He was usually returned unopposed for Belfast University, and had once had the singular distinction of being, for a few hours, the first and only member of the House. In 1914 he was selected as principal medical officer of the army of Ulster, but, as events turned out, he was not required to function in that capacity, and became instead one of the consulting surgeons to the British Army. Professor Sinclair proposed the toast of "The Bristol Medical School," and complimented the citizens of Bristol on their liberal financial support of their University. He recalled many well known names of past members of the medical school, and paid special tribute to Colonel Paul Bush, C.M.G., and Professor Hey Groves. Colonel Bush and Mr. R. H. Moore responded for the school, and Mr. S. V. Stock proposed "The Health of the President."

PROFESSOR R. HOWDEN.

Professor Robert Howden retired on September 30th last from the chair of anatomy and post of registrar at the University of Durham College of Medicine, Newcastle-on-Tyne, and a testimonial fund is now on foot to recognize in some fitting way his invaluable work as anatomist, teacher, and administrator. It is felt that his old students will welcome an opportunity of expressing their gratitude for what he has done for them, while colleagues and other friends in Newcastle and elsewhere will join in appreciation of his work for anatomy, and in particular of his devoted services to the medical school for the long period of thirty-eight years. It is suggested that the testimonial should take the form of a small memento and a cheque. The present students are desirous that the presentation should also include a memento from them. A strong general committee has been formed, and contributions already amounting to some £400 have been received by the executive committee, of which Dr. S. Whately Davidson is honorary secretary. Further donations should be sent to the honorary treasurer, Sir Joseph Reed, at the College of Medicine, Newcastle-on-Tyne, before the end of the year.

MEDICAL TREATMENT OF LONDON SCHOOL CHILDREN.

It was reported to the London County Council on November 29th that the popularity of treatment centres for school children continued to increase, and that during the last six months the centres had been exceptionally busy. The total number of children treated during the half-year to September 30th was 129,128, as compared with 114,223 during the corresponding period of last year. Increased provision has been necessary for the treatment of eye defects and conditions of the ear, nose, and throat. Ringworm cases have fallen off, and the provision under this head is decreased. The process of treating ear cases by ionization has been continued at five special centres; the number of ear cases ionized last year was 1,392. New treatment centres to be opened in 1928-29 include two for in-patient treatment of throat cases, one centre for eye defects, two for minor ailments, and two for dental treatment. The total number of cases for which provision is authorized is 265,000, as compared with 254,000 last year, and the cost of the arrangements will be £102,000, an increase of over £4,000 on the year. At the same meeting of the council the education committee reported on the special clinic at Guy's Hospital, set up as an experiment for one year, for the treatment of children found to be diphtheria carriers. The number of children treated during fourteen months was 102. The committee was informed that considerable benefit had been derived from the treatment, and it proposed to make arrangements during 1928-29 with selected hospitals for the treatment at special clinics of child carriers. The expenditure involved is estimated at £200.

Correspondence.

TREATMENT OF CANCER BY RADIUM.

SIR,—Dr. Fletcher Shaw (December 3rd, p. 1054) evidently belongs to the school of diehards who assert that the Wertheim operation is the one and only treatment for cancer of the cervix. He repeats the challenge, which Victor Bonney has so frequently thrown down, that "when statistics are published in this country showing that cases of carcinoma of the cervix treated by radium have as high a percentage of non-recurrence after five or ten years as have those treated by Wertheim's hysterectomy, I will most gladly abandon this operation, which until then I feel compelled to advise and perform." Apart from the fact that this is a direct repudiation of other clinics' results, notably that at Stockholm, which I have had the privilege of visiting, an experience which confirmed me in the unreserved acceptance of their reports, this attitude can only be that of one insufficiently experienced in the method condemned. He asks for the production of statistics which are comparable to any produced by the advocates of operation; for instance, Bonney claims to have an operability rate of 63 per cent., which means that he considers there is a chance of excising the malignant disease in that number of cases. In the treatment of approximately 300 cases by radium I cannot estimate the operability rate, but my treatment rate is 96 per cent.

The relief obtained from radium is acknowledged by the most sceptical, and is only denied to those with fistulae, malignant cachexia, and the presence of severe septic infection of the pelvic organs; these constitute 4 per cent. of patients presenting themselves for treatment. The question arises whether the more advanced cases are to be refused treatment in order to obtain statistics which would satisfy Bonney and Fletcher Shaw. Radium enthusiasts might easily turn the tables by telling their critics that until their operability rate is 96 per cent. they have no statistics in common. The Wertheim school decline consideration of these unfortunate people, save into the two divisions of operable and inoperable, and the latter are left as an unconsidered trifle, whereas most of them are eligible for radium. I have reported a number of cases treated by radium, only to have them compared with operative results, which, of course, was a comparison of the unlike. From my experience I have no doubt that radium does permanently cure cases of cancer of the cervix, and, could we but decide upon the virulence of a tumour by clinical or microscopical examination, it would materially help in the decision to be taken. Finally I have to declare that I am not prejudiced on this question, for I treat some of these cases by Wertheim's operation, some by radium and operation, and some by radium and x rays.—I am, etc.,

London, W.1, Dec. 3rd. SIDNEY FORSDIKE, F.R.C.S.

SIR,—Dr. Fletcher Shaw's letter in your issue of December 3rd (p. 1054) conveys a definite challenge which, as the present radiologist to the Manchester and District Radium Institute, I feel compelled to take up.

I agree with Dr. Fletcher Shaw that no definite statistics have been published in this country on a five- or ten-year basis, but statistics on a five-year basis have been given by the Radiumhemmet, Stockholm, and I see no reason why a particularly insular attitude should be adopted towards these. I quote those given by Donaldson in your issue of May 9th, 1925 (p. 879):

> Of 181 inoperable cases treated, 16.6 per cent. were well after five years.
> Of 36 operable and borderline cases, 40.5 per cent. were well at the end of five years.

However, the main point is this: Dr. Fletcher Shaw has used the words, "Unfortunately I have to form my judgement upon the results obtained in my own cases." He advocates the statistical method of argument in favour of this or that treatment for carcinoma of the cervix uteri, and in coming to the conclusion that operation is, in his opinion, preferable to radium treatment, he bases it upon the results in his own cases. As an argument this would be more conclusive if his exact figures were given (*a*) in his cases treated by operation, (*b*) in his cases treated by radium.—I am, etc.,

Manchester, Dec. 10th. G. E. BIRKETT.

LATE RECURRENCES OF BREAST CANCER.

SIR,—In your leading article (p. 1100) on the Medical Society of London's report you appear to doubt the direct effect of radiation on malignant cells, and attribute any beneficial effects to stimulation of the surrounding connective tissue. But surely Dr. Canti's experiments on the effect of x rays and radium on growing tissue cells would disprove this theory; and how can the extraordinary effect of radiation on a very sensitive growth such as lymphosarcoma—sometimes visible within five or six hours—be explained but by a direct effect on the malignant cell? Many clinical and experimental observations indeed show there does exist a direct effect, as well as an indirect one by way of the connective tissue, vascular, metabolic, or other changes.

Again, you say that "controlled observations . . . do not tend to confirm the utility" of post-operative radiation. Here it is essential to take into account variations in radiological technique. There are errors of deficiency and of excess; the first shown, I believe, at the Cancer Hospital, where we must conclude the technique some years ago at least was as recommended by Dr. Robert Knox in his book—the "first dose along the line of the scar unfiltered" (*Radio-therapeutics*, 1918, p. 462). A result of this might be a stimulation of any remaining cancer cells below the skin level. But the existence of a stimulation dose is challenged by the Vienna school, and is not yet definitely proved or disproved, either experimentally or clinically. And any stimulation might be a result of the operation, as I have seen seven or eight cases with rapid, widespread local recurrences coming on within a few months of operation in which no radiation had been given.

On the other hand, excessive treatment, as by the so-called Erlangen method used for post-operative cases, has led to an increased proportion of recurrences in some clinics; it is used for primary, but not for prophylactic, work at Erlangen itself. Certain glancing intensive methods may be employed, but the best prophylactic results so far have been with a medium technique.

I hope to publish soon details of a number of successful primary, recurrent, and post-operative cases from the Middlesex Hospital, from a series of over 500 treated by x rays and radium.—I am, etc.,

London, W.1, Dec. 10th. J. H. DOUGLAS WEBSTER.

TRAUMA AND MALIGNANCY.

SIR,—In a recent communication to the BRITISH MEDICAL JOURNAL Sir G. Lenthal Cheatle asks whether anyone has met with the development of a tumour in a wound inflicted on a combatant during the late war. The following case may be of use and interest; it certainly was sad and dramatic.

A man, aged 35, of the New Zealand Expeditionary Force, was wounded by shrapnel in the right jaw and submaxillary region in 1918. He stated that the shrapnel was never removed, and that the wound healed well and gave him no trouble until 1920, when he experienced occasional swelling and tenderness.

In April, 1923, when in the country, he had what he thought was an attack of toothache, and a swelling appeared below the jaw in the situation of the old wound. The swelling got rapidly larger and he went to a town, where the supposed abscess was opened. He was sent to me on May 9th, 1923. As the swelling was in the region of an old wound I thought it might be due to some foreign body. *X*-ray examination did not show any shadow, but revealed an abscess cavity at the apex of a lower molar—the only tooth on that side. The tooth was loose and tender. I explored the swelling, as he had a temperature of 100° and a pulse of 100, and the former incision was suppurating. I immediately found that it was an extensive neoplasm necrotic in the centre. He was given massive doses of *x* rays (the radiologist did not recommend radium), but the tumour grew with most alarming rapidity; the increase in size could readily be appreciated from day to day. In eight weeks he was dead, with a huge fungating mass on the right side of the neck.

Professor Drennan and myself were unable to agree as to the precise pathology of the tumour, so we submitted history, photograph, and sections to Professor James Ewing of Cornell University, and the following is his reply:

"In the remarkable case of tumour of the jaw, of which you send me history, photos, and sections, I have been unable to reach a positive conclusion regarding its nature. From all the facts I am inclined to think that you had to deal with a very malignant osteogenic sarcoma, and one which took the form of spindle-cell growth without new bone formation. These tumours arise from the periosteum. The structure in the sections is much altered by inflammation.

"I would rule out adamantinoma, on the rapid growth, fungation, ulceration, and structure. There are always distinctly epithelial structures easily recognized in adamantinoma, and I find no such structures in this section. I could also find no signs of epidermoid carcinoma."

The question had previously arisen for pension purposes, and liability was admitted by the pensions department. This is the only neoplasm following war injury I have seen. I am occasionally, however, asked whether of the numerous skin grafts made in mucous cavities some will not become malignant—the whiteness of the graft probably prompting the idea. I can only say I do not think so, and have not seen anything indicating such a possibility.—I am, etc.,

Sydney, N.S.W. H. P. PICKERILL, C.B.E., M.S.

TREATMENT OF PROSTATIC ENLARGEMENT.

SIR,—I was much interested to read Sir Cuthbert Wallace's Bradshaw Lecture on prostatic enlargement (November 19th, p. 907), and to note the comments on radiation treatment of this condition by Dr. Curtis Webb (December 3rd, p. 1053). It is well recognized that the more highly specialized tissues like the ovary, the thyroid, and the thymus are very amenable to radiation treatment. Wintz of Erlangen gives the dosage for ovarian tissue as 34 per cent. of the unit skin dose, and we do know that when this dose is applied the ovaries cease to function and a menopause is produced. I have no doubt that the prostate also responds to its dose of choice, although this dose has not been worked out.

There is, however, another factor in addition to a quantitative dosage, and that is a qualitative dosage. When the science of radiology becomes more exact the question of this qualitative factor, or the wave-length of the ray employed, will play a greater part. I have been investigating recently the treatment both by radium and *x*-ray therapy of a number of cases of enlarged prostate, mostly of the simple adenomatous type. In the treatment by radium the sphincter ani was dilated under an anaesthetic, and a heavily filtered radium plaque inserted per rectum and placed in contact with the enlarged prostate. The results were quite satisfactory. I also used deep therapy, giving one perineal and two suprapubic ports of entry, directed towards the prostate and aiming at a depth dose of 40 per cent. unit skin dose. The results here were not so satisfactory.

More recently I have been treating these cases by superficial therapy, giving multiple small doses, about twelve in all, over a period of six weeks, and directed through one rectal port of entry. The results by this method have been the most encouraging of all. Out of eleven cases treated in private one only failed to respond, and in this case complete incontinence of urine was present, which was not due to the prostatic condition. All these patients were referred to me by surgeons on account of the inadvisability of operation from systemic causes. Records of the frequency of micturition and the number of times that the catheter was used were kept by the patient. In the ten cases mentioned where a catheter was used this was dispensed with, and the frequency in all cases dropped from six to eight times a night to a complete undisturbed night. The prostate was examined at frequent intervals and the reduction noted. One patient returned after a year's interval on account of his having to use the catheter. About six exposures were given, and the catheter has now been dispensed with. The dosage employed was about one Holzknecht unit filtered through three millimetres of aluminium. The last four applications were filtered through four millimetres of aluminium. A 16-in. coil and a standard Coolidge tube were used, with a spark-gap of about 6½ in. and two milliamperes of current.

The only explanation that I can offer of these results is that with these repeated small doses and a medium hard ray I have, as it were, approximated the prostatic ray and dose of choice. In all these cases the testicles were not protected, so that the margin of the field affected these, and the giving of this partial castration dose helped the reduction of the prostate.—I am, etc.,

Hull, Dec. 10th. J. E. BANNEN.

PROPHYLAXIS AND CURE OF COLDS.

SIR,—"Never a scientist has dared to hint that he has discovered a cure for the common cold." These words occur in a recent leader in the *Morning Post* on "November colds"; and the statement I take to be true in substance and in fact. Nor have we as yet a settled opinion as to the value of prophylactic anticatarrhal vaccines. Partially controlled experiments in schools have been published from time to time. On the whole these tend to throw doubt on the efficacy of this method of prevention. All of them apparently are open to the objection that the majority of the individuals inoculated have volunteered, and the treated class, in consequence, consists mainly of those who suffer frequently from catarrhs due to infected respiratory passages. It is agreed, I think, that the chronic carrier of catarrh germs is not the best subject for prophylactic inoculation, since not only may the inoculation provoke a cold, but it usually fails to clear away the patient's own microbes, for which purpose an autogenous vaccine must first be administered. None the less, many people assert with conviction that in their case prophylactic catarrh vaccine has prevented recurring colds. To obtain useful statistics where numbers are small, only those individuals should take part whose nasal mucous membrane has been found sterile, or has been so rendered by autogenous vaccines.

It is fairly certain that prophylactic injections act by raising the blood immunity, whereas theoretically the first requirement of cold prophylaxis is to render the mucous membrane immune. This, if practicable, together with an enhanced blood immunity, should provide the ideal cold prophylaxis.

Besredka's remarkable experiments on the local production of immunity to anthrax in the skin of guinea-pigs, followed by the application of the same principle in the treatment of local infections such as furunculosis, acne, and colitis, led some bacteriologists to make use of this principle in the prevention of colds. At the present time there are quite a number of anticatarrhal spray vaccines on the market, either as extracts (according to Besredka) or combined with bile, glycerin, or other diluent with a view to assisting penetration into the mucous membrane.

I have not been able to find any published reports of the results, therefore I thought my experience with the method might be worth giving. In general I have found that with a vaccine of the correct strength benefit accrues; but if the stuff is too strong a cold may be provoked just as with prophylactic injections. After a good deal of experiment, which established these two points, I settled down to a routine method as follows:

A highly polyvalent vaccine of various catarrh germs in a strength of 500 million per cubic centimetre diluted with simple 0.5 per cent. phenol in normal saline is used for adults, and half that strength for children. It is given regularly once a week, and, in addition, whenever the sensations of early catarrh are experienced.

The spray (of the Atlas type) is used intelligently so as to cover the whole ground. The nostril is not plugged by the metal end of the spray, but a passage left so that the vaccine can be sniffed up as the bulb is squeezed. This is done five times to each nostril. Afterwards the mouth and throat are sprayed whilst the breath is sharply drawn in—expiration takes place through the nose. Thus all the upper air passages are reached. The results have been very good, not only in preventing colds, but also in curing a cold even in the most acute stage. My experience has now lasted over some two years, and I feel able to assert with a good deal of confidence that the above method, faithfully carried out, in combination with prophylactic anti-catarrhal inoculations, will be successful in a large proportion of all cases. It has one great advantage—namely, that the actual spraying can be carried out by the patient himself.—I am, etc.,

H. WARREN CROWE.

London, W.1, Nov. 25th.

TUBERCULOUS LESIONS FOLLOWING INJECTION OF PITUITARY EXTRACT.

SIR,—Within the last three years we have had four cases of mild tuberculous lesions of the arm, which we have every reason to believe followed injections of pituitary extract.

After the first two cases one of us got in touch with the makers of this drug, who told us emphatically that it was quite impossible for the living tubercle to exist in the extract. Now that two more cases have come under our care we should like to hear whether other people have had similar experience, as if there are a number of such cases the matter should be taken up by the various firms who are making this drug.

In two of these cases the ulcer has been excised and sections showed undoubted tuberculous lesions.—We are, etc.,

MALCOLM DONALDSON, F.R.C.S.
C. S. LANE-ROBERTS, F.R.C.S.

London, W.1, Dec. 9th.

ERGOSTEROL, VITAMIN D, AND RICKETS.

SIR,—Professor Wynne's letter in your issue of November 26th recalls very clearly the respective theses as to the etiology of rickets submitted by Professor Mellanby and his co-workers on the one hand, and by the Glasgow school on the other hand, some years ago, before the facts as to the influence of ultra-violet light on this disease became generally known. It is, however, with the concluding paragraph of Professor Wynne's letter that I am chiefly concerned, as it raises a question of very great importance in the field of public health at the present time—namely, whether the prevention of rickets should be tackled by public health authorities exclusively along the lines of instruction in diet and provision of cod-liver oil, or whether artificial sunlight clinics should be developed as part of a public health policy. As one who has experimented with both of these lines of action in child welfare centres in a northern town, may I be permitted to emphasize the great value of the latter?

In my experience far quicker and more constant results, in the cure of active rickets, with improvement of general health, are obtained by the use of ultra-violet light than by instruction in diet and provision of cod-liver oil, and I am of opinion that exposure of the skin of infants to light and air should be our *primary* means of preventing rickets. If the prevention of rickets is intended to come primarily by absorption of vitamin D through the alimentary tract, why is breast milk commonly so poor in antirachitic factor, and why is there so much rickets in breast-fed babies? On the other hand, many breast-fed babies who have never had cod-liver oil escape rickets; and do not these belong mainly to the classes who take every opportunity, during the summer, of freely exposing their children's bodies to light and air? Does it not seem from these facts that nature intended us to absorb vitamin D primarily from our skins?

The great value of artificial sunlight clinics, from the public health point of view, is not only that they marvellously restore rachitic infants to health, but that they draw attention to the vital necessity of regular and repeated doses of sunlight on the naked body, for the healthy rearing of infants.

This, I submit, should be regarded as a factor of primary importance in the prevention of rickets even in this climate. In practice every antirachitic influence that can be utilized is often required for success. An antirachitic diet, of course, should be our aim for all children, and cod-liver oil and its substitutes are of great assistance, although their application is quite often limited. But if we recognize the prime importance of the skin route for the absorption of vitamin D with maintenance of general health, we shall concentrate upon teaching people to make the most of our sunlight, and we shall consider the expense of the public provision of artificial sunlight clinics justified.—I am, etc.,

H. STANLEY BANKS.

Isolation Hospital and Sanatorium,
Leicester, Nov. 30th.

THE PHYSIOLOGY OF DEFAECATION.

SIR,—It seems evident that the habit of constipation has been evolved as an adaptation to the necessities of civilization. A cow may defaecate whenever and wherever she pleases. A monkey with his arboreal life may do almost the same, though possibly he has developed an instinct to retire to the lower branches for defaecation, so as not to incommode his fellows. But when primitive man took to gregarious life in caves or huts it was necessary to defer defaecation; and those individuals who could not do so must have been eliminated as unfit. As civilization became more complex a further elimination must have occurred. Think of those primitive conditions when there were no conveniences in houses, and when the retirement to a "draught-house" or privy was a thing to be avoided as long as possible! And think of the long journeys, with inadequate accommodation at the stopping-places!

Nowadays the man who has two or three evacuations a day, though in consequence he may enjoy better health and longer life, has certain disadvantages to put up with which some persons find serious; for his call to defaecation is apt to occur in the midst of a social function or a journey, and (far too often) in the night.—I am, etc,

F. J. ALLEN.

Cambridge, Dec. 12th.

SIR,—The very great importance of the correct understanding of this subject prompts me to suggest that it is the greatest pity that the views of Sir Arbuthnot Lane and his school and those of Dr. A. F. Hurst cannot be compared, and so reconciled; for I know that these two schools are in possession of knowledge of, or rather insight into, the physiology of the colon that can hardly be said to exist academically, and is therefore not available to the profession generally.

I was, years since, deeply indebted to Sir A. Lane for his guidance in the study of the physiology and pathology of the abdomen, but I am also hardly less indebted to Dr. Hurst for drawing my attention (through his book on constipation) to the wonderful observations of O'Beirne. After years of study I came to these conclusions, briefly stated:

1. That the mass peristalsis observed by *x* rays to occur in the colon three or four times in the twenty-four hours was the natural, but in civilized people abortive, effort at defaecation,

and that, therefore, repeated defaecation during twenty-four hours is the true physiological state.

2. That, therefore, "normal" people were living unphysiologically.

3. That—most important of all, it seems to me—*the primary lesion (or the primary stage) in the development of chronic intestinal disease was residual faeces in the pelvic colon.*

It is to this condition that I wish especially to draw attention. Here is a grave and most common pathological condition which is unrecognized by the profession at large. So little is it known that it is commonly described, when seen by *x* rays, as "faeces in the rectum."

I have drawn the attention of Sir A. Lane and others to this really serious error, which occurs in authoritative books on constipation and the radiology of the abdomen (I can give exact references if required). I drew attention to this grave pathological condition in my pamphlet *A Study of Intestinal Stasis* (1922: J. Bale, Sons and Danielsson), which was favourably reviewed in the BRITISH MEDICAL JOURNAL and the *Indian Medical Gazette* and elsewhere. I there also appealed for the serious consideration as to whether our "normal" was really a truly physiological standard. Dr. A. C. Jordan (BRITISH MEDICAL JOURNAL, December 10th, p. 1120) evidently agrees with me that it is not.

Until this question is examined, academically and clinically, we shall not make progress in the prevention and control of acute and chronic intestinal diseases. On the other hand, let it be once realized that the chronic presence of residual faeces in the pelvic colon is as definite a disease as, say, pyelitis or residual retention of urine in the bladder, or empyema in any cavity of the body, and we shall go ahead.

At present, in routine *x*-ray reports on the alimentary tract, this gross lesion is commonly ignored and overlooked. Physicians should ask for a picture of the pelvis taken immediately or shortly after defaecation, whatever hour this may occur after the opaque meal has been given.—I am, etc.,

London, Dec. 12th. JAMES C. WATT.

THE PROBLEM OF MENTAL DEFICIENCY.

SIR,—A very important report has just been issued by the administrator of the Besford Court Catholic Mental Welfare Hospital for Children. So retrograde are the views expressed that I venture to call attention to them through the columns of the JOURNAL.

It is difficult in the short space I can expect from you to comment adequately on all the points raised. I will deal with the principal one, the mental deficiency problem viewed in the light of Catholic philosophy. The author claims that four inherent rights of humanity have been assailed by modern social reformers. They are: (1) the right to live; (2) the right to bodily integrity; (3) the right to freedom; (4) the right to marriage.

(1) No one disputes this. The lethal chamber for aments is not advocated by any social reformer. The point therefore does not need discussion.

(2) The author condemns, on religious grounds, the sterilization of defectives. It is, he says, a brutal assault on innocent and defenceless members of society. Although I am a very strong opponent of sterilization I cannot for one moment agree with the reason given against it. There are other and much better ones. If sterilization would diminish the sexual crimes of defectives, if it would do anything to help to cure the state of mental deficiency, if it would in any way lessen the antisocial tendencies of the aments or in any way assist in solving the problem of our defective population, I would whole-heartedly support it. But sterilization does one thing, and one thing only, and that is prevent the production of children. It does not alter or improve the mental condition. It does not diminish sexual power or desire, and therefore it does not lessen the risk of sexual offences or of the propagation of venereal disease. It does not make the defective criminal into an honest man. It does not make the unemployable ament into a useful citizen. It does not make the immoral feeble-minded into a moral being. It does not enable the pauper or vagrant defective to earn his own living. Therefore it leaves exactly the same necessity (with the single exception of the question of propagation) for constant and perpetual supervision as before the operation was carried out. If sterilization must of necessity be followed by segregation (and if we are properly to control the mental defectives, segregation is essential) what benefit is it to sterilize at all?

(3) This right of freedom, if conceded, would entail enormous harm on the general community. The antisocial propensities of the mentally defectives (as evidenced by crime, sexual outbreaks, pauperism, vagrancy, alcoholism and so on) must be controlled. This is best attained by segregating the aments in special institutions, where, under proper control and care, they live happy and contented lives, yet cannot inflict harm on the community. Their injurious tendencies are kept in bounds, and cannot cause much mischief or suffering to their fellow creatures.

(4) It is generally agreed, I think, by those who have made a study of the subject, that the offspring of two mentally defectives is *always* a mentally defective, the offspring of a mentally defective and a normal is *generally* defective. This fact by itself justifies the conclusion that in no circumstances should a mentally defective be allowed to marry and propagate. The problem is serious enough as it is. By deliberately encouraging the further production of aments it would become far more difficult.

With every admiration for the well meant efforts of the institution, it is impossible to accept them as a forward contribution to the solution of the important question of the management of the feeble-minded. It is a very distinctly retrograde movement. The present-day attitude of sociologists in this matter cannot truthfully be called "a regression towards paganism." The efforts being made for the efficient and adequate treatment of this sociological question are sane, sensible, and humane. They at least have a chance of lessening the number of the antisocial elements in our population.—I am, etc.,

Hove, Nov. 18th. L. A. PARRY, F.R.C.S.

CONTRIBUTORY SCHEMES FOR HOSPITALS.

SIR,—The success of contributory schemes in raising money is due to the demand for specialist advice and a nursing home, two necessities which only the very poor or the fairly rich can obtain.

The faults of the schemes are: (1) Poor people are crowded out of hospitals. (2) The general practitioner loses his patients. (3) The specialist, more especially if not on the staff, also loses patients.

The remedies are: (1) Contributory schemes should be on such a scale that they can pay establishment charges, etc., in order that the necessary enlargements may be made. (2) The general practitioner should be able to use the hospital as a nursing home. Of course it will be said that this is impracticable, but general practitioners follow their cases in private nursing homes. Poor Law infirmaries might be turned into municipal nursing homes and the panel doctor treat his cases there. (3) Provision from the fund should be made for payment of specialist fees as in the ophthalmic benefit scheme.

Your correspondent Dr. Fothergill (November 12th, p. 899) writes of specialists not on the staff of a hospital: all specialists and general practitioners should have an opportunity of serving on the staff. The above remarks do not apply to teaching hospitals.—I am, etc.,

Southsea, Nov. 17th. F. C. B. GITTINGS, M.D.Lond.

THE THERAPEUTIC ACTION OF CALCIUM SALTS.

SIR,—Dr. Prest's communication to the JOURNAL (November 19th, p. 958) raises some interesting points. The first is the greater therapeutic value of calcium in the colloid than the crystalloid state. In the discussion on calcium therapy (October 29th, p. 777) most of the speakers referred to the use of calcium in the crystalloid form, solutions of calcium salts being dissociated into calcium ions. As there is a carefully maintained balance of calcium ions in the blood, it is unlikely that medication with calcium ions will do much to upset this balance for more than a very short time.

Dr. Prest suggests that the doses he employed (corresponding to the sixth decimal dilution of the homoeopaths) act in a different manner to the ordinary therapeutic agents. I would suggest that the colloidal calcium in his cases has functioned as a biocatalyst.

The researches of Davis and Rivers in America, and Fildes in this country, demonstrate that traces of two substances are essential for the growth of certain haemophilic bacteria. One, termed the "V substance," is thermolabile, and corresponds to the vitamins. The other, "X substance," is thermostable, and capable of taking up oxygen; various compounds of iron can function as this "X substance," and only minute traces are necessary for the growth of these bacteria.

Davis comments on this interaction between vitamins and traces of metallic substances, and suggests that we are dealing with a principle of nutrition of fundamental significance.[1] He quotes the cases of experimental rickets of MacCollum and Simmons, which suggest that the level of phosphorus concentration in the blood is regulated by the presence of the fat-soluble A vitamin.—I am, etc.,

Clifton, Nov. 29th. FRANK BODMAN.

Obituary.

WE regret to record the death of Dr. ALBERT EDWARD NORBURN, a well known and much respected member of the medical profession in Bath. He studied at Guy's Hospital and took the diplomas of M.R.C.S., L.R.C.P.Lond. in 1881. He graduated M.B., B.S.Lond. in 1890, and proceeded M.D. in 1894. He served as resident obstetrician and house-physician at Guy's Hospital, and some thirty years ago commenced practice in Bath. He was consultant to the Winstanley Sanatorium, and acted as surgeon to the Bath War Hospital. Dr. Norburn took great interest in the work of the British Medical Association, was chairman of the Bath Division in 1922, and president of the Bath and Bristol Branch in 1925-26. When the Association held its Annual Meeting in Bath two years ago Dr. Norburn served on a number of committees responsible for the arrangements.

Dr. EDWIN CUTHBERT MONTGOMERY died at Southampton on November 23rd, aged 85. He received his medical education at the school of the Royal College of Surgeons in Ireland and took the diplomas of L.M.Dub. in 1861, L.R.C.S.I. in 1862, and L.S.A. in 1867. He was in practice at Maidenhead for forty-five years, and retired nineteen years ago, when he removed to London. Some nine months ago he went to live in Southampton for health reasons. Dr. Montgomery had held the office of resident medical superintendent at the Munster House private asylum, Fulham, and subsequently that of medical officer to the Cookham District and Workhouse of the Cookham Union. It was only recently that he celebrated his diamond wedding. His son Dr. Edwin C. Montgomery is in practice at Maidenhead.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

AT a congregation held on December 10th the following medical degrees were conferred:

M.B., B.CHIR.—I. A. Jackson, B. W. S. Mackenzie, W. E. Chiesman.

UNIVERSITY OF LONDON.

THE following candidates have been approved at the examination indicated:

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—*F. Back, *J. N. Jacobson, *J. M. Mackenzie, *J. J. O'Reilly, *M. Robinson, †E. C. T. Emerson.

* With special knowledge of psychiatry.
† With special knowledge of mental deficiency.

UNIVERSITY OF DURHAM.

SIR THOMAS OLIVER, M.D., LL.D., F.R.C.P., Vice-Chancellor of the University of Durham, and president of the College of Medicine, Newcastle-on-Tyne, has been appointed the representative of the University at the celebrations of the tercentenary of the publication of William Harvey's book, *De Motu Cordis*, to take place in London in May, 1928.

VICTORIA UNIVERSITY OF MANCHESTER.

THE following candidates have been approved at the examination indicated:

FINAL M.B. and CH.B.—R. S. Abraham, S. K. Appleton, S. Bernstein, Agnes N. Buckley, E. Cretney, E. B. Davies, D. E. Francis, Dorothy Guest, Amy H. Herbert, G. D. Hithersay, J. H. Jones, J. Kemp, Kathleen McGowan, Jean McD. Marshall, H. E. Martin, J. R. Nuttall, Nora Ridehalgh, Lucy Stokoe, C. E. Sykes, J. Vine. *Forensic Medicine*: E. H. Brooks, J. A. Longworth. *Hygiene and Preventive Medicine*: Doris Bernard, E. H. Brooks, Mary G. Davies, G. B. Hardman, E. P. Johnson, J. A. Longworth, J. W. Murray. *Obstetrics and Surgery*: G. L. Brown, D. E. Francis, Alexandra W. Groves, I. M. Hughes, Morris Levine, Kathleen McGowan, J. S. Miller, E. J. B. Sewell, H. Tickle, J. F. Wilkinson. *Obstetrics*: S. Nowell.

UNIVERSITY OF EDINBURGH.

THE following candidates have been approved at the examination indicated:

FINAL M.B., CH.B.—C. H. B. Adamson, H. J. van den Berg, A. G. Bonnyman, K. V. R. Choudari, Bessie L. Clark, A. J. Clements, B. Cohen, J. L. Cowan, T. A. Edwards, E. A. Fergusson, Jessie D. Forrester, J. Fraser, L. M. E. R. Henshaw, W. H. Houghton, S. Jesudasen, W. H. E. Johnson, F. M. Khan, J. Kingsley, A. A. MacArthur, J. W. B. Macdonald, A. E. Mackintosh, K. M'Neill, A. G. R. Macpherson, A. W. MacQuarrie, F. F. Main, R. Mennie, W. M'G. Mitchell, W. D. Moore, J. S. R. Pandit, W. H. D. Patterson, P. J. G. Payne, Frances M. Porter, L. L. Ratazzi, A. S. Reilly, R. H. Robertson, J. M. Russell, B. S. Sandhu, Margaret A. Spencer, E. R. Thomson, E. W. T. Webber, Elizabeth M. Williams.

UNIVERSITY OF DUBLIN.

TRINITY COLLEGE.

AT the first winter commencements, held on December 8th, the following degrees and licences were conferred:

M.D.—Dorothea A. M'Entire, C. R. Moore.
M.CH.—B. Gluck.
M.B., B.CH., B.A.O.—J. J. FitzGerald, J. A. K. FitzGerald (*Antea Lic.*), E. M. Gamble, J. K. Harper, I. Isaacson, I. le Roux, G. M'Donald, R. M. Moore, G. M. Smith, J. H. Stephens, C. P. Wallace, Ethel M. Weir, R. R. Woods.
LICENCE IN MEDICINE, SURGERY, AND OBSTETRICS.—G. H. Henry.

NATIONAL UNIVERSITY OF IRELAND.

A MEETING of the Senate was held on December 9th, when examiners and supervisors of examinations for 1928 were appointed.

The degree of M.D. was awarded to the following upon the published works presented by them: J. Faul, F. Kane, P. Heffernan, A. R. J. Dungan.

The Dr. Henry Hutchinson Stewart Scholarship in mental and nervous diseases was awarded to John FitzGerald, University College, Cork.

The Vice-Chancellor was appointed to represent the University at the celebration of the semi-jubilee of the University of Liverpool in May, 1928. A report from the President, University College, Dublin (Dr. Denis J. Coffey), as representative of the University on the General Medical Council, was approved.

UNIVERSITY COLLEGE, CORK.

The following appointments were made: Professorship of Surgery, John Dundon, M.B., B.Ch., B.A.O., F.R.C.S.I., F.R.C.S.Eng.; Lecturership in Ophthalmology, Vernon O'Hea-Cussen, M.B., B.Ch., B.A.O., D.O.Oxf.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

AN ordinary Council meeting was held on December 8th, when Sir Cuthbert Wallace presided, in the absence of Sir Berkeley Moynihan.

Diplomas and Licences.

Diplomas of Fellowship were granted to the following 32 successful candidates out of 114 who presented themselves for examination:

B. Biggar, J. M. Wedde'l, F. C. Alton, D. J. Evans, W. D. Galloway, N. A. Sprott, E. T. Bailey, J. F. Hackwood, W. H. George, A. T. Fripp, S. M. Milner, P. D. Braddon, R. K. Debenham, E. A. Freeman, R. Broomhead, J. H. F. Jayasuriya, B. G. Johnston, E. D. Moir, La T. A. Digges, A. W. Fawcett, J. McFadzean, A. Seif-El-Din El-Katib, J. Fitzsimons, J. P. Ainslie, W. H. Bremner, S. W. Drinkwater, F. N. Foster, C. H. Hembrow, E. S. J. King, C. H. G. Macafee, W. M. Robb, J. E. Schofield.

J. C. B. Allen, J. T. Fathi, J. Gore, R. L. Holt, H. J. Seddon, and R. M. Walker also satisfied the examiners at the Final Fellowship Examination, but have not yet attained the age of 25.

Diplomas of Membership were granted to Messrs. D. S. Davies, C. R. Greene, and A. R. Kerridge.

Licences in Dental Surgery were granted to 46 candidates.

The following universities were added to the list of universities whose registrable medical and surgical degrees entitle their holders to admission to the Final Examination for the Diploma of Fellow without first becoming Members of the College—namely, India: University of Lucknow; Canada: University of Montreal; South Africa: University of South Africa, Pretoria; University of Capetown, Capetown; University of Witwatersrand, Johannesburg.

[1] *Journ. Amer. Med. Assoc.*, lxxvii, 683.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

THE following are the Council and office bearers for the ensuing year: President, Dr. Robert A. Fleming; vice-president, Dr. George M. Robertson; council, Dr. G. Lovell Gulland, C.M.G., Dr. Robert Thin, Dr. John Orr, Dr. William Fordyce, Dr. Edwin Matthew; treasurer, Sir Norman Walker; secretary and registrar, Dr. George Gibson, D.S.O.; honorary librarian, Dr. Robert Thin; curator of the laboratory, Sir Robert Philip; representative on the General Medical Council, Dr. William Russell; superintendent of the laboratory, Lieut.-Colonel McKendrick; librarian, Mr. T. H. Graham, O.B.E.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.

THE following have, after examination, been admitted as Fellows of Faculty: A. N. Fergus, S. M. A. Faruki, J. E. S. Lee. The Macewen Medal, presented to the Faculty by Mr. J. A. C. Macewen, in memory of his father, the late Sir William Macewen, has been awarded to William C. McLaren, the most distinguished student in surgery of the year who had passed the examinations of the Scottish Conjoint Board, and who had obtained his clinical instruction in surgery in Glasgow.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

IN the House of Commons this week the Audit (Local Authorities) Bill was read a third time, a Supplementary Estimate was voted for the troops in China, and the Expiring Laws Bill was debated. On the last measure discussion arose on shop hours, and the Home Secretary announced that he hoped to introduce next year a bill making permanent several statutes, including the Aliens Act, now renewed yearly. The House of Lords passed the Films Bill and considered the Prayer Book measure of the Church of England, which was due to be debated by the Commons later in the week.

The Nursing Homes Bill was put down by the Government for its concluding stages in the House of Commons on December 12th, but on condition that it was treated as unopposed business. This proved impossible because, though a compromise had been reached over the administration of the bill by local authorities, the Government was understood to be ready to accept an amendment exempting Christian Science nursing homes from inspection, and the medical members of Parliament demurred at this. There remained a widespread desire that the bill should be passed before the end of the session.

At the close of the sitting of the Commons on December 12th the Mental Deficiency Bill, which had been amended in Standing Committee, came up for consideration on the Report stage. On Clause 1, which defines defective persons, Mr. B. Crompton Wood, who was in charge of the bill, moved two amendments to paragraph (*d*) of the clause, which were accepted without discussion. Paragraph (*d*) now reads as follows: "Moral defectives, that is to say, persons in whose case there exists mental defectiveness coupled with strongly vicious or criminal propensities and who require care, supervision, and control for the protection of others." The bill was then read the third time, without discussion, and passed.

Board of Education Medical Department.—Answering Mr. Harris, Lord Eustace Percy said that in addition to the chief medical officer, seven medical officers (five men and two women) were employed in the medical department of the Board of Education. They visited day schools for blind, deaf, and mentally deficient children, but the special problems of these schools necessitated regular inspection by medical experts. The Board had not, in approving appointments of school medical officers, laid down any minimum qualifications in psychology or in knowledge of schools and educational organization

Foot-and-Mouth Disease.—Mr. Chamberlain told Dr. Vernon Davies, on December 8th, that, so far as he knew, no case of foot-and-mouth disease had occurred in a human being in this country during recent years. Two suspected cases had been investigated by a medical officer of the Ministry of Health, but in neither could clinical or biological confirmation be found of the suggestion that the patient was suffering from this disease. On December 12th, in reply to Dr. Vernon Davies, who asked if any meat contaminated with foot-and-mouth disease had at any time been brought to this country from South America, Mr. Guinness said the Ministry of Agriculture had no evidence of that. A senior veterinary inspector of the Ministry was in South America seeking to secure the assent of South American Governments to proposals designed to prevent the introducion of the virus of foot-and-mouth disease into Great Britain. The Parliamentary Secretary to the Ministry, Lord Bledisloe, was joining him. Mr. Guinness stated that foot-and-mouth disease existed so long in the New Forest before it was reported to the Ministry of Agriculture that it had been impossible to obtain definite evidence of the cause of the original outbreak there and in Wiltshire.

Vaccination of Family of Poor Law Employee.—Asked a question by Mr. Broad concerning the circumstances in which the medical officer for the Buckingham Institution and public vaccinator for the Leckhampstead district vaccinated the wife and children of a man employed at the Buckingham Poor Law Institution, where cases of small-pox had occurred, Mr. Chamberlain said the woman at first demurred to vaccination of herself and her children, but, on being informed by the medical officer that her husband was being vaccinated, she consented to the vaccination of herself and the youngest child. Three other members of the family went to the medical officer's surgery and were vaccinated. The medical officer was not informed that declarations of conscientious objection had been made in respect of the children. He told the woman that, having regard to the fact that she kept a post office, she should be vaccinated, as otherwise he felt it would be his duty to inform the authorities, but he denied having used any threats. Mr. Chamberlain added that there did not appear to be any reason for admonishing the medical officer.

Small-pox.—Mr. Chamberlain had not received on December 8th the report of the Committee on Vaccination. On the same day he stated that in the past three months small-pox had been more prevalent in the county of Durham than in any other district of Great Britain.

Prevention of Diphtheria.—The official memorandum on the prevention of diphtheria issued by the Ministry of Health in 1922, Mr. Chamberlain announces, is being revised, and the new edition will reindicate the action which it is open to local health authorities to take in the promotion of the use of the Schick test and immunization methods, and the assistance which they may obtain for this purpose from the Ministry of Health.

Tuberculosis.—On December 13th Sir K. Wood, in reply to Mr. Hore-Belisha, said he could not state what percentage of tuberculous cases, discharged after treatment from sanatoriums, died from tuberculosis within five years of their discharge. Local authorities were empowered under the Public Health (Tuberculosis) Act, 1921, to make arrangements for the after-care of persons who had suffered from tuberculosis, and many local authorities had made arrangements of this kind. Mr. Hore-Belisha asked if Sir K. Wood was aware that the Ministry of Health did not appear to keep any really valuable statistics relating to tuberculosis, and urged him to see that more accurate information was collected and made available. Sir K. Wood replied that Mr. Hore-Belisha was under a misapprehension. He would be glad to show the statistics the Department possessed and to explain the many steps that they were taking. Sir K. Wood, in a further reply to Mr. Hore-Belisha, said it was the duty of the local medical officer of health under the Tuberculosis Regulations to take such steps as were necessary or desirable to prevent the spread of infection in every case of tuberculosis which was notified to him. Those patients who received sanatorium treatment were instructed in the precautions necessary to avoid the risk of infecting other persons. Mr. Hore-Belisha asked if it was customary for the ex-sanatorium patients to be sent back in a very bad condition, and that they developed the disease again and spread it. Sir K. Wood said that in a number of cases these people returned home of their own desire, or sometimes at the request of their relatives. It was very difficult to deal with such cases. Dr. Vernon Davies asked if Sir K. Wood was satisfied that the local authorities were doing all in their power to deal with these cases. Sir K. Wood: No, I am never satisfied in these matters.

Miners' Nystagmus.—Sir W. Joynson-Hicks, replying to Sir Richard Luce, on December 12th, said that he fully realized the unsatisfactoriness of the present position in regard to definition of miners' nystagmus. The matter was one of difficulty, and he had found it necessary to refer again to the Medical Research Council for further advice on certain points. He regretted, therefore, that it was not yet possible to come to a final decision.

Grants for Research.—On December 12th Mr. Ormsby-Gore told Mr. Blundell that grants made or offered by the Empire Marketing Board included £9,000 to the Liverpool School of Tropical Medicine for research in metazoan immunity; £20,000 to the Medical Research Council for research at the Lister Institute on the vitamin content of fruit, vegetables, and dairy produce; £6,000 to the Rowett Research Institute, Aberdeen, for research into the physiological and pathological conditions associated with certain rationed and specialized diets, with special reference to native tribes in Kenya.

Health of Office Employees.—Replying on December 8th to Dr. Fremantle, Mr. Chamberlain said he had no evidence that the health conditions generally prevailing in offices called for special action. The powers of local authorities in the matter had not been shown to be insufficient, but inspection must at present be governed by financial circumstances. He had no evidence that sickness rates in offices were worse than among the general population, but he would look into any evidence which Dr. Fremantle produced.

Beds in Voluntary Hospitals.—Mr. Chamberlain has stated that, on the best information available, there were 54,406 beds in the voluntary hospitals of England and Wales on December 31st, 1926, an increase of 3,946 beds in two and a half years since the survey of the Voluntary Hospitals Commission. That Commission now had no funds at its disposal.

Milk Supply.—Sir K. Wood, in reply to Brigadier-General Clifton Brown, on December 13th, said that a case had been brought to the notice of the Minister of Health in which a dairyman advertised milk as "tuberculin-tested milk," although he did not hold a licence under the Milk (Special Designations) Order. Proceedings under Section 3 of the Milk and Dairies (Amendment) Act, 1922, would be justified, but the Minister had no power to take them nor to give any instructions to the local authority. It was a matter for the local authority, and, in the opinion of the Department, was a case which should be brought to the courts. Brigadier-General Brown further asked how the Minister expected to encourage the production of tuberculin-tested milk if he allowed inspection by people who had not got the Ministry's sanction at all. Sir K. Wood replied that the Minister had already brought

this case to the notice of the authorities concerned, and still hoped that something might be done. Brigadier-General Brown asked the Minister to consider the question of placing a mark on tuberculin-tested milk which had been properly inspected. No answer was given.

Gas Warfare.—On December 13th Mr. G. Locker-Lampson told Lieutenant Commander Kenworthy that the Government had decided not to ratify the convention against gas and bacteriological warfare agreed upon at Geneva until all other important Powers had ratified its protocol or had signified their intention of doing so.

Whole-time Medical Officers of Health.—On December 12th Sir K. Wood, replying to Dr. Vernon Davies, said that there were 118 non-county boroughs and 182 urban districts in England and Wales with full-time medical officers of health.

Notes in Brief.

It is not the practice of the Civil Service Commissioners to examine the physical qualifications of persons who apply for admission to civil service examinations. Their physical eligibility for appointment is investigated in the event of their success, and the Government cannot consider the suggestion of a prior medical examination at the candidate's expense.

Asked whether the Government would now ratify the International Labour Office Convention on Maternity Protection, Sir Arthur Steel-Maitland said this country already had in force a policy aiming at the same results, and the Government considered the adoption of the specific proposals of the Convention would lead to administrative difficulties.

Information showing the number of former patients of sanatoriums who had become chargeable to the guardians is not available.

The Minister of Education is causing one of the medical officers of the Board of Education to make a special inquiry into the physical state of children in South Wales.

The Ministry of Transport rules that grants could not properly be made from the Road Fund to enable hospitals to meet the extra costs resulting from the number of motoring accidents.

The Services.

NO. 14 STATIONARY HOSPITAL.

THE eighth annual dinner of the No. 14 Stationary Hospital was held at the Trocadero Restaurant, London, on December 9th. Lieut.-Colonel J. R. Harper, C.B.E., who was in the chair, proposed briefly the toast of "The Hospital," and in reply Colonel J. S. Warrack contributed a few anecdotes which provoked a brisk interchange of pleasant and humorous reminiscences, ranging over the four years' activity of the hospital on the French coast. Numerous letters had been received from members of the hospital staff now in foreign countries. A hearty vote of thanks was accorded to Dr. H. L. Tidy, the organizer of the dinner.

DEATHS IN THE SERVICES.

FLEET SURGEON SAMUEL KEAYS, R.N.(ret.), died at Kingstown, co. Dublin, on November 7th. He was educated in the school of the Irish College of Surgeons, and took the L.R.C.S.I. in 1875, the L.K.Q.C.P. in 1876, and the M.K.Q.C.P. in 1884. He entered the navy in 1878, became fleet surgeon in 1899, and retired in July, 1903.

Colonel William Edward Riordan, Army Medical Service (ret.), died at Southsea on November 11th, aged 87. He received his medical education in the school of the Irish College of Surgeons, and took the L.R.C.S.I. in 1863 and the L.K.Q.C.P. in the following year. Entering the army as assistant surgeon on September 30th, 1864, he attained the rank of colonel in 1895, and retired in 1900. In the old regimental days he was medical officer in the Royal Artillery. He served in the Egyptian war of 1882, receiving the medal and the Khedive's bronze star, and in the Sudan campaign of 1885 at Suakin, gaining a clasp. He was the author of a *Manual for the Army Medical Service.*

Inspector-General Henry Hadlow, R.N.(ret.), died at Southsea on November 30th, at the advanced age of 91. He took the L.S.A. in 1857, seventy years ago, and the M.R.C.S. in 1859. Entering the navy soon after as assistant surgeon, he attained the rank of deputy inspector-general on May 3rd, 1889, and retired with an honorary step in rank as inspector-general on May 7th, 1894. He received the Sir Gilbert Blane medal for his journal of practice on board ship. As assistant surgeon on H.M.S. *Conqueror* he was present at the attack on the batteries in the straits of Simonoseki, Japan, from September 5th to 8th, 1864. His active service, therefore, was at a period prior to the revolution in Japan, which brought the Mikado to the headship of that country as actual as well as nominal ruler.

Further details have now reached us regarding the career of Lieut.-Colonel Lewis Cameron, of whom an obituary notice appeared on October 29th (p. 806). While civil surgeon of Backerganj a storm wave swept the district, killed large numbers of people, and threatened the remainder with cholera. Colonel Cameron spent considerable time and money in travelling by boat from place to place in order to treat those in need and prevent further disaster. During his service in Rajshahai he was for six years in control of the central prison, and at the time of his retirement was offered an inspectorship of jails.

Medical News.

THE late Mr. W. Thelwall Thomas of Liverpool, who died in September last, has left estate of the value of £118,388, with net personalty £109,759. He bequeathed £5,000 each to the University of Liverpool, to endow a fellowship in surgical pathology; the Royal College of Surgeons of England; and the Royal Medical Benevolent Fund for pensions for medical men and their widows. He has also given £1,000 to the Liverpool Medical Institution for the annual purchase of books of reference or journals. He directed that his house in Rodney Street should be used as chambers for medical men so long as the executors shall think fit; the portrait in oils of himself he bequeathed to the University of Liverpool.

MR. HORACE H. REW, assistant secretary of the Conjoint Board in England, has succeeded as secretary Mr. F. G. Hallett, whose resignation took effect on December 5th.

THE house of the Royal Society of Medicine will be closed from Friday, December 23rd, to Tuesday, December 27th, both days included.

AT the meeting of the Royal Microscopical Society to be held at 20, Hanover Square, W.1, on Wednesday, December 21st, at 8 p.m., papers will be read by Dr. W. J. Elford on the principles of ultra-filtration, and by Dr. G. S. Sansom on the origin of giant cells in the placenta. The annual meeting of the society will be held on January 18th, when Dr. James A. Murray, F.R.S., will deliver his presidential address.

A POST-GRADUATE course on diseases of the nervous system will be held at the National Hospital, Queen Square, London, W.C.1, from January 30th to March 23rd, 1928. The course will consist of clinical lectures and demonstrations, teaching in the out-patient department, and pathological lectures and demonstrations. The fee will be £5 5s. A course of lectures on the anatomy and physiology of the nervous system will be arranged if there are sufficient applicants; fee £2 2s. Clinical demonstrations of methods of diagnosis in diseases of the nervous system will also be given; fee £2 2s.

As announced in our advertisement pages the Grocers' Company, with the object of encouraging original research in sanitary science, is offering scholarships of £300 a year each, together with an allowance to meet the cost of apparatus and other expenses in connexion with the work. Application forms can be obtained from the clerk to the Grocers' Company, Grocers' Hall, E.C.2, to whom they must be returned before the end of April.

THE Old Epsomian Club held its fiftieth annual meeting and dinner on December 8th. Sir Cecil Armitage, the new president of the club, in proposing "Floreat Epsomia," related how he entered St. George's Hospital and studied materia medica, but on reaching bones decided to join the West African Colonial Service, and through the first aid he learnt at the hospital gained the respect and affection of the natives. He said that the colonial service offered many openings to medical men, especially in West Africa, sometimes leading, as in the case of Sir William McGregor, to governorship. The headmaster, Mr. Powell, in replying, described the efforts now being made to raise the age of entry at the school to 12 years, thereby bringing Epsom into line with the large public schools. The boys of public school age now numbered 329 instead of 234, and shortly should be 400. Mr. Powell gave an account of the successes achieved in scholarships, the classrooms, and sport. Dr. H. F. Ealand, in a humorous speech, proposed the health of the guests. In reply, the Right Hon. W. Ormsby-Gore, parliamentary under-secretary to the Colonial Office, twitted Dr. Ealand with inaccuracies, urged the advantages of the colonial service as a career, and said that owing to the doctors West Africa was no longer the white man's grave. The dinner was very successful, and the attendance was said to be the largest ever attained.

OLD St. Bartholomew's men will be glad to know that a new edition of *Round the Fountain* (with illustrations) is due to appear before Christmas. Besides the paper-covered edition, at 3s. 6d., a limited number of copies will be printed on superior paper in cloth binding at 7s. 6d.

DR. W. HENDERSON DAVISON, O.B.E., barrister-at-law, at present acting medical officer of health for Birmingham, has been appointed coroner for the city of Birmingham at a salary of £1,250 a year in succession to the late Mr. Isaac Bradley. At a meeting of the Public Health Committee of the corporation of Birmingham on December 9th a resolution appreciative of Dr. Davison's services was adopted.

SOME more cases of the disease described by Drs. Olmer, Boinet, and Pieri to the Académie de Médecine, and referred to in the paragraph entitled "Brill's disease at Marseilles" published a fortnight ago, were reported on November 15th to the Académie de Médecine by Drs. Plazy, Marcon, and

Carboni. The onset was sudden, with headache, lassitude, constipation, and meteorism. The spleen was enlarged in 50 per cent. of the cases. The rash was discrete and either morbilliform or in lenticular rose spots. Occasionally it became purpuric. In some cases there was a bucco-pharyngeal rash, or the conjunctivae were injected. None of their patients died. All the cases occurred between the months of March and October. The patients came from ships or from the neighbourhood of the port; none were verminous, and the authors were inclined to attribute the source of infection to rats or mice. As noted in our original paragraph and emphasized in Dr. Goodall's letter last week, the disease would appear to be a mild form of typhus, or, as Plazy and his colleagues would call it, "benign endemic typhus (Brill's disease)."

THERE has been more small-pox during the past summer in the United States than in the corresponding periods of 1926 or 1925, the figures given by 37 States for thirteen weeks being as follows: 1927, 2,900 cases; 1926, 2,400 cases; 1925, 2,000 cases. The virulent type, however, has not appeared in the United States this year, and very few deaths from the disease have been reported. Poliomyelitis also has been more prevalent than in either of the two preceding years: 37 States reported 4,000 cases for the thirteen weeks in 1927, 1,100 in 1926, and 3,200 in 1925.

Letters, Notes, and Answers.

All communications in regard to editorial business should be addressed to *THE EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.*

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Authors desiring REPRINTS of their articles published in the BRITISH MEDICAL JOURNAL must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the JOURNAL, should be addressed to the Financial Secretary and Business Manager.

The *TELEPHONE NUMBERS* of the British Medical Association and the BRITISH MEDICAL JOURNAL are *MUSEUM 9861, 9862, 9863,* and *9864* (internal exchange, four lines).

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QUERIES AND ANSWERS.

TREATMENT OF SYPHILIS.

"K" asks for advice in the treatment of a stubborn case of syphilis, or of procuring a living child in the following case: The patient has had three dead-born full-term babies, one being an anencephalic monster. The disease is of seven years' duration. For three years he injected her intravenously and intramuscularly with novarsenobillon, and in addition gave full doses of mercury and potassium iodide. This year a colleague took charge of her and gave her eight injections of salvarsan and massive doses of mercury and potassium iodide. She aborted last month, and her blood to-day gives a Wassermann reaction (*plus* four). She is very stout and apparently in excellent health. Her husband responded to treatment very readily, and his blood gives a negative Wassermann reaction.

INCOME TAX.

Motor Car Allowance.

"F. C." inquires with regard to a sequence of car transactions.

*** It should be remembered that the cost of replacement allowance is not given in respect of the loss on the car displaced, but as representing the appropriate part of the expenditure incurred on the new car. Thus the *net* cost of the second car bought in 1914—that is, £537–£110=£427—should have been the amount allowable in respect of the 1914 transaction, and so on. The question of capital improvement is complicated by two factors—first, the fact that a saloon car was used between 1914 and 1922, and secondly, by the fall in car prices between 1922 and 1926. If the last two cars are taken by themselves the inspector of taxes is right in objecting to the "saloon" basis of cost, but, seeing that a saloon car was in use to 1922, we think he would probably drop the objection if that fact is emphasized. The proposed future depreciation allowance of 15 per cent. is not uncommon. The decision on the matter rests with the Commissioners, to whom an appeal would be made. They might take into account the fact that to the extent to which it is insufficient an obsolescence claim will normally put the taxpayer right when the car is renewed.

Change in Partnership: Cash Basis.

"APEX" explains that as from January 1st, 1928, his share in the practice will be increased from one-third to two-fifths. What effect on income tax will result from (1) including and (2) excluding outstanding book debts in the valuation to be placed on the additional share purchased?

*** The amount of the income tax paid by "Apex" should not be affected by the choice arrived at; the cash basis method is only an approximate method of calculating the true liability, which is on the basis of the value of gross earnings. If the firm as reconstructed adhere to the cash basis system for the future, as we assume they intend to do, the tax payable by "Apex" will bear a close ratio to his net cash receipts from the practice. It is true that he will have bought some of those receipts, but, on other hand, he will be accounting for income tax (as is legally correct) on other income which has been earned but has not actually been received.

Change in Membership of Firm: Cash Basis.

"C." and "E." were in partnership to July 1st, 1926, when they were joined by "H.," formerly their assistant. The assessment for 1927–28 is based on the cash receipts of the practice for the year to 1926, less the expenses of the three partners, including, presumably, "H.'s" salary for the six months to July 1st, 1926, but the fractional division of the subsequent profits does not apply to fees earned before that date.

*** It is, of course, clear that "H.'s" share of the tax will exceed what he would have to pay on the basis of his share of the cash receipts of the year, but this is correct, because, as a commencing partner, such receipts do not adequately indicate his income tax liability. The figures supplied by the inspector of taxes seem to us sufficiently correct in the special circumstances; the only alternative is for the firm, as a whole, to discard the cash basis for 1927–28 *and future years* and base their returns on the value of the fees booked instead of the cash received. "H." may, perhaps, be unfortunate at the moment if, as is possible of course, the cash receipts for the six months prior to his entering the partnership were abnormal, in which case he will be helping to pay tax on the harvesting of his partners' past earnings.

LETTERS, NOTES, ETC.

PYREXIA WITHOUT VISCERAL SIGNS.

DR. SUNDARA RAJAN (Coimbatore, South India) writes to express his interest in Dr. Franklin's note (JOURNAL, August 27th, p. 350) on pyrexia without visceral signs, which he thought might be due to slight intestinal influenza. Dr. Rajan states that he has seen ten such cases within three years. The patients had a sudden rise of temperature unaccompanied by pain, but with a little cough, for which no cause could be found in throat or lungs. The tongue was furred and very often there was slight constipation. When this was relieved and the patient put on a diaphoretic mixture the pyrexia still persisted for three or four days. Even mixtures containing sodium salicylate did not influence the fever.

PREMATURE RUPTURE OF THE MEMBRANES.

DR. J. S. PEARSE (Plymouth) refers to the comments of A. Mayer and E. Frey (*Epitome*, December 3rd, paras. 529 and 530) on the increasing number of cases of premature rupture of the membranes. Dr. Pearse has noted also frequent reports of such cases in the BRITISH MEDICAL JOURNAL, and raises the question whether this premature rupture, if it occurs, can be classed as a definite post-war condition. He remarks, however, that it used to be a common experience, both before and during the war, to be told erroneously on arrival at a midwifery case that the membranes had broken. The mistake arose from the escape of the "forewaters" in hydrorrhoea gravidarum, premature rupture of the membranes being quite a rare event.

CORRECTION.

IN our report of the discussion at the Medical Society of London on late results of operation for carcinoma of the breast published last week, the initials of Mr. A. J. Walton (page 1086) were incorrectly given.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 43, 46, and 48 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 44 and 45.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *236*.

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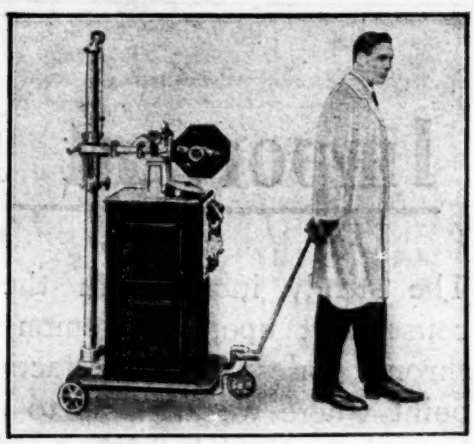

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